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## LECTURE.

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GENERAL SIR WILLIAM J. CODRINGTON, G.C.B., Colonel Coldstream Guards, &c., &c., in the Chair.

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### MARITIME RIGHTS.

By JOHN ROSS-OF-BLADENSBERG, Coldstream Guards.

I HAVE been invited to draw your attention to the question of "Maritime Rights," a subject which has unfortunately been but too much neglected of late. An examination will, however, show that the exercise of these most important rights is necessary to our Power, and that, therefore, our existence as a nation is dependent on the restoration of our time-honoured customs of naval warfare. Much attention has been naturally given to the recruiting question. We must keep pace with the armaments which are being organized around us. It would, however, be fatal, if all our present efforts have not developed the natural forces of the country, but instead, have only copied the institutions of foreigners, who differ from us in national characteristics. Great Britain is essentially naval and commercial; it would be suicidal if we have inadvertently agreed to a rule, by which maritime action is paralysed in a war with a military power, and by which our mercantile shipping—the nursery of the Royal Fleets—would be lost to us, when the enemy is himself a naval power. Yet such is the case; a Declaration (of Paris), which was promulgated some twenty years ago, has crippled our national strength in this way. It is to this subject that I am to draw your attention.

In a pamphlet which I wrote, I attempted to describe the old law of maritime capture to be:—"That a belligerent had a right to seize "the goods of its enemy. Thus, if England and France were at war, "an English ship bearing the commission of the Sovereign, if it met a "French merchantman with French cargo on board, could capture both "ship and cargo. Again, if the English cruiser sighted a neutral—"Dutch, suppose—the former could stop the latter, examine her "papers, and if she were found to contain a French cargo, the cruiser "could compel the neutral to take the cargo to a place of safety, "where it could be made a prize (by order of the Admiralty Court), "while the neutral ship, and neutral goods which might be on board,

" went free, the neutral carrier being paid by the captor the freight " she would have received for the hostile cargo, had she performed her " journey in safety. No injury whatever is intended to the neutral ship; " her presence only cannot protect the property of the enemy. Again, " as war opens up a market for articles useless in peace, the belligerent " can stop and confiscate such articles, when destined for the enemy's " ports, no matter who the owner may be. These rules must be " carefully distinguished from the illegal orders that have been fre- " quently given with respect to capture, and from the old and equally " illegal custom of forbidding neutrals *all trade* with the enemy. " These have unhappily been too frequent; they have done a great " deal of harm, because they have confused the minds of men as to " what were the legal maritime rights; it having been often due to " these improper rules that wars occurred. Let us, therefore, observe " the difference between the maritime rights, as above shown—re- " corded in the *Consolato del Mare*, the oldest code of maritime laws " known since Europe emerged from the dark ages, after the over- " throw of the Roman Empire—and the unfair ordinances of France " —which declared not only the enemy's cargo a prize, but also the " neutral carrier—as well as the atrocious Berlin and Milan decrees, " and the equally unjust Orders in Council which followed."

All jurists, men of different nationalities, up to the middle of the last century, have considered that the *Consolato del Mare* expressed the just law, and they confirmed it. Our own statesmen were most particular on the subject; and Lord Stowell, the celebrated Judge in the Prize Court during the beginning of this century, showed that the law was not made or enforced for England's own benefit, but that it was her due according to natural right. Further, it was incorporated into the municipal laws of both England and France, and thus it became part and parcel of their state organization.

But England had other reasons to bind her to her old naval traditions. Our statesmen did not only argue on their justice, their actions also showed that the existence of the nation would be imperilled by their abolition.

In 1780, Great Britain was in great difficulties—at war with her revolted American colonies, harassed by discontents in Ireland, and attacked by France, Spain, and Holland, we were passing through a terrible conjuncture. This was the moment that Russia, supported by a league of several nations, chose to assert, by force of arms, that enemies' goods should go safe in neutral ships, except contraband of war. England, although she had no force to oppose the league, did not give in to their pretensions. In 1800, when again entangled in a war, Paul I., of Russia, revived the Armed Neutrality of 1780; but this time we were more free to act, and Pitt and Grenville were at the head of affairs; a fleet was sent to the Sound, the battle of Copenhagen, and the defeat of the Danes, was the result, and the victorious fleet sailed to crush the other members of the League, Sweden and Russia. But a revolution had occurred. Paul was murdered, and his son Alexander changed the policy of the Empire, which was unable to withstand the action of England against

her trade. Peace was made, and the Armed Neutrality dissolved. Many of the speeches of public men of the time, show how the statesmen of the day valued our maritime rights. I would refer you to the speech from the Throne at the opening of Parliament, 1801, and the debate thereon, especially Lord Eldon's speech. In 1807, Russia left our Alliance, a declaration as if of war was directed against her, and in it these important words, so full of significance, occur:—"Those "principles," namely, of maritime law, "it is the right and duty of "His Majesty to maintain; and against every confederacy His "Majesty is determined, under the blessing of Divine Providence, to "maintain them. They have at all times contributed essentially to "the support of the maritime power of Great Britain; but they are "become incalculably more valuable and important at a period when "the maritime power of Great Britain constitutes the sole remaining "bulwark against the overwhelming usurpations of France; the only "refuge to which other nations may yet resort in happier times, for "assistance and protection." This was written after Austerlitz, Jena, Eylau, and Friedland.

But in 1854 all was changed; on the eve of the Crimean war we waived our maritime rights—those which were founded on justice, and custom immemorial, which were supported by all independent jurists for centuries, and which were defended by every British statesman, and by all our traditions. And at the negotiations of the Peace in 1856, a declaration was issued confirming the above renunciation, in the following terms:—

- 1st. Privateering is and remains abolished;
- 2nd. The Neutral Flag covers enemy's goods, except contraband of war.

Now this event created no noise, no astonishment, no consternation. No one protested that a mistaken policy had cut away from us one of our most time-honoured rights, and no one complained that traditions—nay, the laws of the land—were abolished without formality and without discussion. This, in a Nation like our own, could only have become possible when a veil of forgetfulness and ignorance had dimmed the vision of the real cause of our former success. It must be remembered that naval power exercised by capture, is not so readily perceived as military strength—conspicuous in reviews and organization—and it is easy to forget the hidden causes of our greatness, when there is nothing to remind us of them. But observe the result. England's maritime rights, held in such estimation, have been abolished without trial; and instead of its being necessary for those who wished their destruction to prove that our old customs were barbarous and dangerous, the burden of the proof has now been shifted, and it remains for others to prove that our policy for centuries was not mistaken, and that the importance attached to a particular law by our greatest statesmen, was not absurd!

The only whisper—for no real accusation was ever brought against our old maritime rights, was (1) that neutrals would not permit us to exercise them, and (2) that they were antiquated and barbarous.

If our rights are just, it is not according to the British character

to give them up. Had England or Russia forbidden Prussia to use her *artillery* during the late war, would she have obeyed? And yet we gave up more, far more, than our artillery in the Declaration of Paris. But who were the powers that constrained us to yield our rights? It was not France, for her laws of capture were even more stringent than our own, as may be seen by those who follow out the French marine ordinances, many of which are detailed in Mr. Lawrence's note in Wheaton's International Law. Neither was it the United States, for that power has always maintained that, by right, enemy's goods may be seized in neutral vessels (*v. negotiations between France and United States, 1797-98*).

The injustice or barbarity of the old maritime law has equally never been shown.

1st. *Privateers* have been much abused; but as a great deal of piracy has gone on under that name, it is not, perhaps, extraordinary that a fierce cry should be raised against their employment. When we come, however, to examine what they really are, when performing their legitimate duty, it becomes apparent that they constitute—for England—a very strong and proper force. Privateers are private ships which obtain commissions from the sovereign to fight for their country. They are bound by very strict rules, and they cannot complete a capture, until the vessel taken is adjudged a good prize, in due course of law, in an Admiralty Court. After condemnation the capture, subject to certain reservations, becomes the property of the captors. Privateers receive no pay, they cost the country nothing. The legitimate employment of privateers has nothing to say to the grave irregularities which have occurred at different times, in which neutral vessels often took out letters of marque from a belligerent sovereign, to prey upon the trade of the other; this is naturally nothing but murder and piracy, and cannot be defended for a moment. Military nations organize into armies all their population capable of bearing arms, and naval nations are equally entitled to utilize their resources which consist in shipping; the masses of men which Germany can produce in her armies are a strength to her; the crowds of armed cruisers which England can send into every sea, and which would pay themselves on the commerce of the enemy, are an enormous strength to us; and why should we be deprived of that force? Up to a recent date in the world's history, there were no State Navies (if we except the Fleets of ancient Rome); maritime nations depended upon their private ships of war. Themistocles won the battle of Salamis, and freed Greece from the Persians, with the merchant shipping of Athens and the Islands; the Carthaginians used their mercantile fleets in their wars; and the Invincible Armada was put off a year owing to the Spanish commercial losses, caused by British privateers, and in 1588 was opposed by the English Fleet, in which there were only 34 ships belonging to the Royal Navy. An alliance of maritime nations might destroy Great Britain's superiority in some seas, if men of war—properly so called—were only employed; but no coalition could ever succeed in doing so, if England will only restore to herself the power she has of covering every corner of the

ocean with volunteer cruizers, and of sweeping any enemy off the sea.

2ndly. *Neutral Flag covers enemy's goods except Contraband.* The only argument that can be urged on apparently legal grounds to support this doctrine, is that the neutral merchantman is a continuation of the territory of the nation whose flag it carries, that this territory cannot be violated, and that therefore goods, even if belonging to an enemy, cannot be touched when on board. It is, however, always conceded that these vessels may still be searched, to prove their right to the flag they have hoisted, and to see whether there is any contraband of war among the cargo. But this search is not permitted when the merchantman is in neutral waters, under the *real* territorial protection of a neutral government, which clearly proves that when search is allowed on the high seas, there is no violation of neutral rights, and that, even on their own showing, their theory is without foundation. The capture of contraband of war is founded upon the truth, that neutral colours on the ocean do not indicate a portion of neutral territory, the capture of enemy's goods is founded on precisely the same principle; how then can anyone allow the first, and disallow the second?

The controversy is, however, easily set at rest, when we consider the *acts* of those nations who professed to believe in the sanctity of the neutral flag. Those who, in 1780 (during the first Armed Neutrality), were loudest in denouncing Great Britain's tyranny at sea, and in declaring that their sole desire was to secure the liberty of commerce; those very powers, when it suited them, turned round and vigorously enforced the old maritime law! Sweden did so in 1787, Russia also, in her war against the Porte, the same year; in 1793 she entered into a Maritime Convention with Great Britain, in which she engaged to use her influence to prevent neutrals from protecting the commerce of the French on the high seas; and in 1799 the Emperor Paul threatened the Danes with immediate hostilities on account of "their supplying assistance and protection to the trade of France, "under the neutral colours of the Danish flag." France also went to greater lengths; in 1798 she declared that all *vessels* found on the high seas with any English goods whatever on board, to whomsoever belonging, shall be good prize; that neutral sailors found on board English vessels shall be *put to death*.<sup>1</sup>

The doctrine "free ships, free goods" is one which cannot be substantiated in justice, and the coalitions which tried to force it upon us were merely attempts to deprive us of a natural supremacy which they feared; at other times they have all shown that it is right to seize enemy's goods in neutral vessels. And this cannot be contested by anyone, if they will only consider that as it is lawful to shed blood in war, it is also admissible to capture hostile property; and if so, who can believe that a neutral is discharging his duties of neutrality in protecting a belligerent by covering his trade? No land force would allow non-combatants to shield the enemy from a blow, why should sea forces permit them to do so? Before leaving this part of the subject, I would refer you to Ward's "Treatise on Maritime Law,"

<sup>1</sup> Alison's "Hist. of Europe," chap. xxxiii, § 3 and 11.

published in 1801, and reprinted in 1875; this short work embraces all that can be said on the legal side of the question.

It is very obvious that when nations go to war, their armies meet each other in order to invade or to protect territory. Land has a real value, and therefore its possession is a gain to an invader. Armies do not meet as champions to fight out the differences of their countries, but one belligerent seeks an objective and aims at a point least difficult to seize, and most inconvenient for the enemy to lose; thus are provinces overrun and capitals taken, the physical and political powers of the enemy are attacked, and the land forces manoeuvre against each other in the field to accomplish or to thwart these ends. Frederick the Great, in 1756, occupied Saxony, and held it during the remainder of the Seven Years' War. Every one knows the advantage he derived from its resources, in fact, it gave him all the strength of a province of whose future welfare he was not so careful as of his own kingdom.

The ocean, on the other hand, is a barren waste, it cannot be occupied, and fleets do not meet each other for its possession. It is, however, a great highway, and across it, commerce and men are transported; naval wars are undertaken for the attack and defence of foreign trade. The wealth of a nation which goes by sea is immensely important to it; without it, Adam Smith has shown that it is impossible to carry on a foreign war. The supremacy of the sea, therefore, which enables a belligerent to destroy the commerce of his adversary, gives him power which far exceeds, in coercive force, military strength. I have not been able to ascertain the exact amount of German produce which left the country during the late war with France, but according to statistical returns, I see 52,000,000*l.* as the value of the imports into Hamburg during 1870. Taking, then, the exports of that town as 40,000,000*l.* (the ships that cleared were less than those that entered with cargoes), it is easy to see what a loss the French could have brought upon their adversaries, had they seized German produce; for had they been able to destroy the commercial prosperity of the merchants, the Government of Berlin would have found it difficult to support the waste of war in men, supplies, ammunition, and money in the heart of the invaded country. The maritime nation, then, that can capture the property of its enemy by sea—be that property much or little—must paralyse his military efforts, sever the sinews of his power, and bring bankruptcy upon the very resources which enable him to be aggressive.

A few incidents in some of the naval wars which have taken place, will bear out what has been here advanced.

The Illyrians were a restless and piratical people in ancient times, and they made great depredations on the commerce of Rome and Greece. The Senate having failed to obtain redress, prepared for war by sea and land (B.C. 219). The Romans were victorious, granting peace to the enemy under the terms that they should pay a tribute, abandon Illyria, a few places only excepted, and that they should never sail beyond Lissus with more than two frigates, and those unarmed. The war was principally by sea, and the Admiral alone received a

triumph; it gave great *prestige* to the Romans, and particularly in the eyes of the Greeks, who had been unable to check the scourge of the pirates. From this time also the Romans were admitted to the Isthmian games, and considered as part of the Grecian civilised world.

Later, pirates from Cilicia infested the Mediterranean Sea to such an extent that Rome, powerful as she was, found her trade and navigation nearly cut off, and thus a famine was apprehended in the capital of the World, caused by the action of a few corsairs. Many distinguished persons, Plutarch informs us, cast in their lot with these pirates, and their prosperity was very great. The people of Rome were, however, so affected by scarcity, that they invested Pompey with almost regal powers over the whole empire; he collected a large armament of 500 galleys, 120,000 foot, and 5,000 horse; he swept the seas, capturing a great many of the enemy, and defeated them in the naval engagement of Coracesium, where they had collected their fleets to oppose him. Plenty was immediately restored in Rome.

In 1527 the French, under Lautrec, invaded Italy. They were very successful, and early next year they nearly took Naples by a strict blockade by sea and land. Andrea Doria and the fleets of the Italian commercial republics were allied to the French, but Francis I. threw away all this advantage and success by folly. He attempted to injure the Genoese trade, and being opposed by Doria, he sought to arrest him. The Italian Admiral revolted to Charles V., restored plenty in Naples, and the French, having now lost their superiority at sea, were soon reduced to great straits for want of provisions. The French raised the siege, leaving their guns behind them; and after losing many of their men the small remains surrendered at Aversa. Doria now succeeded in liberating his own town, Genoa, from the yoke of Francis; these reverses enabled Charles to force upon his adversary the humiliating treaty of Cambray.<sup>1</sup>

In 1535, also, Charles collected the maritime power of the Mediterranean, and defeated the famous pirate Barbarossa, the scourge of all Christian merchants in that sea. Six years later his expedition to Algiers to destroy another nest of pirates was not so fortunate, it was badly timed, and his ships were nearly all sunk in the storms which arose. The Emperor and the survivors escaped with difficulty.

The maritime power of the Turks was very great in the middle of the 16th century, and their fleets swept over the Mediterranean unopposed, notwithstanding the efforts of Spain and Italy. In 1565, however, they failed to capture Malta, only owing to the brave defence of the Knights of St. John, but in 1570 they took the Island of Cyprus. Philip II. made another attempt to check their victorious career, the navies of the Christian part of the Mediterranean were united under Don John of Austria, and the Turks were defeated at the great battle of Lepanto<sup>2</sup> (1571). This decisive engagement destroyed the Ottoman power in the Mediterranean, and from this moment may be dated the commencement of Turkish decline, for although their course of victory

<sup>1</sup> "Hist. of Charles V.," by Robertson, book 5. Dyer's "Hist. of Modern Europe," vol. i, p. 488, &c.

<sup>2</sup> Dyer's "Hist. of Mod. Europe," book iii, chap. vi.

was not entirely run, yet the defeat at Lepanto so set a period to the overwhelming power they were acquiring, that from thenceforward they ceased to be a real alarm to Europe.

About the same time (middle of 1572), the Prince of Orange was elected Stadholder of Holland, Zealand, Friesland, and Utrecht, and the Dutch Republic began to assume an independence. This was mainly brought about by the "Gueux de la Mer," a numerous fleet of Dutch ships, which destroyed the Spanish trade.

If we now turn to our own wars, we shall, I think, see that they were essentially naval operations directed against the enemy's commerce, and that it was by that means alone, that England has gained the power which has so pre-eminently distinguished her in Europe.

The foreign policy of Cromwell was most vigorous. It has been said that he designed to make the name "English" as much feared and respected as the appellation "Roman" was in the ancient world. His reliance was placed in the maritime resources of this country, and he sought to improve them. The war between the English and Dutch (1652) was produced by commercial rivalry; but in it our fleets gained great successes, and paralysed the commerce of the enemy. It has been calculated that the Dutch, during two years' hostility against Great Britain, lost 1,700 prizes, valued by the Dutch themselves at 62,000,000 guelders, or 6,000,000*l.*, while they could not boast of having taken from England a fourth part, either in numbers or in value, of that amount; they were also brought to greater extremities in this two years' war than they suffered in their eighty years' war with Spain.<sup>1</sup> These successes made England a very powerful nation, and her alliance was much sought after by both France and Spain.

The splendid victories of Marlborough were supplemented by successes at sea, among which was the capture of Gibraltar by Sir George Rooke (1704). The marine of the French was everywhere inferior, but our own trade was well secured, and flourished all through the war, and our merchants were so well affected to the government, "that upon every occasion they were ready to credit the administration with the best part of that immense wealth that had been raised under their protection. These were glorious times indeed, if riches, victory, and honour can render a nation glorious," (v. "Campbell's "Lives of the Admirals," vol. iii, p. 488).

The war with Spain also (1739-1748), enabled us, by the successes of Anson and Vernon, to shake the prosperity of that kingdom; and the war with France was also signalised by the victories of Anson and Hawkes (1746), which, with others, destroyed the French Navy. But in the next war (1756-1763), the pride of France was humbled to the dust by the vigour of our great statesmen who lived at the time. At first, indeed, we lost Minorca, but this unfortunate occurrence was soon rectified by victory, which was gained in every quarter of the globe. Lord Mahon thus describes the state of the French in 1761: The country "on every side defeated, stripped of her fleets, her colonies, her commerce, and compelled to announce a bankruptcy to several classes of her public creditors." Choiseul, the French minister, sued

<sup>1</sup> Campbell's "Lives of the Admirals," vol. ii, p. 223.

for peace; but at this moment Spain came to his rescue, and his demands rose. Pitt declared at once that war should be pronounced against Spain, and asserted that the first blow, "far from adding to the expenses of the war, would in fact diminish them; the seizure of the Spanish treasure ships and private merchantmen would be accomplished without any new armament or augmentation to the British Navy, and would afford means for invading the Spanish colonies, so that the enemy would himself defray the charge of the attacks on his own dominions." Pitt could not carry his point; his colleagues had neither his determination nor genius, and he resigned; and thus fell an administration which raised England to a great pitch of glory. The Spanish war was only deferred; as soon as the treasure ships and other commerce were safe in harbour, the war was declared; Pitt's prediction was also true, for the English gained by it; it simply had the effect of adding to their prizes. Looking at the national debt contracted for the year, it does not appear that the addition of Spain as an enemy increased the expenses of the war; but, on the other hand, several islands in the West Indies were taken, at Havannah, treasure and merchandise, computed at three millions, was captured, the Philippine Islands were also seized, and several rich Spanish prizes were made. Frederick the Great, in his posthumous works, thus draws a parallel between the state of France and England at the end of this important war: "The payment of the interest of 'their' (the French) 'borrowed capitals had been suspended; the little that was paid was paid irregularly; the people groaned under the weight of the taxes, by which they were overwhelmed; and though no incursion of the enemy had ravaged the provinces, the state did not suffer the less; for the commerce of the two Indies being destroyed, the sources of public abundance were dried up. The national debt had accumulated, and amounted to sums so enormous that after the peace, the extraordinary taxes were prolonged for ten years, in order to pay off the interest, and to create a sinking fund for the further payment of this interest. The English victorious by sea and land, may be said to have purchased their conquests by immense sums, which they borrowed to carry on the war, and which almost rendered them insolvent. The opulence of individuals exceeded all imagination. The wealth and luxury of the people were the consequences of the considerable prizes that so many private persons had taken, as well from France as from Spain; and of the prodigious increase of trade, of which, during the war, they had almost solely been in possession."

Every one knows the series of blunders which alienated the American colonies from us, and the disasters which for the first time attended our struggles. France and Spain seized this opportunity eagerly, to level their forces against England; a country which had destroyed their colonies, their wealth, and their greatness. Holland followed suit, tempted by France; and the Armed Neutrality League of Catherine II. added to our troubles. It is true we lost our American colonies, but united Europe was not able to wrest from us the empire of the sea—in that element alone we were still pre-eminent, and

made ourselves formidable to our enemies by the victories of Rodney and Howe.

The wars of the French Revolution, which lasted with little intermission for twenty-two years, began in 1793; during this period the continental nations were all in turn subject to Napoleon. England alone stood as his unconquered opponent, and as the rival which checked all his attempts at universal empire. A careful study of events will show that it was our power which ruined Bonaparte, and that his great object was to defeat Great Britain; he understood perfectly that with the world in his possession, he was still insecure and vulnerable if we held the sea, but that if the naval strength of England were destroyed, he at once would become universal Sovereign. At Ulm, in October, 1805, as the Austrians, who had capitulated, were paraded before him, he gave expression to this truth: "I desire no-'thing," he said to General Mack, "on the Continent. France wants 'only ships, colonies, and commerce; and it is as much your interest 'as mine that I should have them."<sup>1</sup> But these he did not get. The victories of Howe, St. Vincent, and Duncan had laid bare the commerce of the enemy, and established anew our superiority over the fleets of France, Spain, and Holland. As a set-off, the genius of Bonaparte acquired conquest after conquest in Italy (1796-1797), which culminated in a naval expedition, the seizure of Malta, and the descent on Egypt. Nelson, who had been foiled in his endeavours to meet the French armament in its passage, came upon the fleet lying in the Bay of Aboukir, after the troops had landed. He immediately engaged and defeated it. The results of this splendid victory were very important; a third part of the naval force of France was destroyed, Great Britain obtained an irresistible superiority in the Mediterranean, the French commerce in the Levant was annihilated, all hope of conquest in Egypt was dissipated, and Napoleon's expedition was reduced to a mere military descent, without hope of reinforcement or retreat, in which the invading army must perish by its own triumphs.<sup>2</sup> These brilliant successes caused much discontent among the Allies, owing to the supreme power they gave us. Russia feared England's maritime strength far more than France's military pre-eminence; she proclaimed us the tyrants of the sea, and revived the attempt to rob us of our naval strength, by the second Armed Neutrality. The results of this have been already traced.

The next phase of the war was Napoleon's attempt to invade England. Admiral Villeneuve, although he evaded the fleets sent to pursue him, was unable to join the French armament at Boulogne, owing to the partial victory of Sir Robert Calder off the coast of Finisterre. Napoleon, seeing he could not even obtain a temporary command of the Channel (fifteen days was all he required, *v.* Note written at his dictation, September, 1805, "*Correspondence de Napoléon avec le Ministre "de la Marine"*"), changed his direction, marched into Germany, and after the capitulation of Ulm, and the victory of Austerlitz, subjugated Austria, and forced her the Peace of Pressburg. By sea, however,

<sup>1</sup> Bain's "Wars of the French Revolution," vol. i, p. 437.

<sup>2</sup> Dyer's "Hist. of Mod. Europe," vol. iv, p. 356.

the French and Spanish fleets were still watched, while their commerce was exposed. Admiral Villeneuve, in trying to escape, was defeated in the great battle of Trafalgar, and the naval power of Bonaparte was reduced to a mere phantom, while our flag floated everywhere without a rival. An attempt to make peace proved abortive, and the French military operations still pursued a triumphant career; Prussia was overwhelmed at Jena; and Russia, defeated at Eylau and Friedland, made peace at Tilsit, in 1807. The French Emperor, now master of Europe, was unable to injure England, but the latter was able to harass him very considerably. Had Great Britain exercised justly her maritime rights, it is probable that France would have been bankrupt before this period. It appears, however, that, owing to certain enactments, a great deal of *bonâ fide* French produce was allowed to escape. A pamphlet, entitled "War in Disguise; or, the Frauds of Neutral Flags," published 1805, drew attention to this fact; and the annual *exposé* of the state of France laid before the Legislative Assembly, 16th January, 1804, declares that out of 200,000,000 livres which might have been captured by England, more than two-thirds of that amount had been saved.<sup>1</sup>

After 1806 the course of the war was unfortunate. Napoleon tried to close the ports of the Continent, and thundered out his Berlin and Milan decrees, wild threats against all trade, which he could not carry into effect. Great Britain answered by the famous Orders in Council, illegally creating paper blockades. We had the power, and did carry out these orders, but we only succeeded in oppressing ourselves and our friends. They were called retaliative, but they were not so, they overstepped the law; they did France no more harm than the legitimate exercise of maritime rights would have done, and they alienated the United States from us, producing, in 1812, the war which followed.

Russia, at the peace of Tilsit, had bound herself to observe the French Commercial Decrees, but she was unable to do so. She supports her Government by a foreign trade, and a non-intercourse with England means bankruptcy for her. The French invasion (1812) was produced mainly by the inability of Alexander to keep to these engagements. Yet Russia was not too desirous of destroying Napoleon until the moment had arrived when she should be able to push troops into Europe and assert her claims. Marshal Kutusoff, the Russian Commander-in-Chief, accordingly protected the French Emperor (notably at Krasnoi), during his disastrous retreat across the snows of Russia. The reason was, that the Government of St. Petersburg feared England's maritime power, or, as Kutusoff put it, "I am by no means sure that the total destruction of the Emperor Napoleon and his army would be such a benefit to the world. His succession would not fall to Russia, or any other Continental power, but to that which already commands the sea, and whose dominion would then be intolerable."<sup>2</sup>

The final overthrow of Napoleon, in 1815, was effected by the steady advance of the Continent on France, wasted by so many wars,

<sup>1</sup> Bain's "Wars of the French Revolution," vol. i, p. 455.

<sup>2</sup> "The French Invasion of Russia," by Sir Robert Wilson, pp. 234, 271, &c.

and enfeebled by commercial losses; and, in 1815, the Congress of Vienna finally closed the long period of hostility.

The naval strength of Great Britain had then exhibited itself by attacks on the commerce of the enemy, which forced the inferior fleets of the enemy out of their harbours to protect their convoys; and the general action of England by sea seems to have been, that crowds of privateers and other ships opposed the hostile cruisers, and cut off the enemy's trade in every corner of the globe, while the larger ships of war blockaded the enemy's fleets, and attacked them as they sought to escape, in order to protect and escort their harassed commerce. This naval strength was England's chief power; for her armies, good as they have always been, have seldom been numerous enough to effect very decisive military operations properly so called. The maritime preponderance which we still have—did we only restore our rights by sea—is now even more than it was, when Talleyrand said to the English Ambassador, in 1806, "You are the rulers of the ocean; your naval forces are equal to those of all the Sovereigns of the world united. We are a great Continental Power, but there are many who equal our power by land, and your marine preponderance will always place our commerce at the mercy of your squadrons immediately after your declaring war." In fact, no nation has any weapon long enough to reach us, but we can destroy in our enemy the means of making war, and can paralyse his Government by ruin.

In 1854 we were again at war; but this time, having waived our maritime rights, the war bore quite another character. In 1812, we declared that the maxim, "free ships, free goods," would make Great Britain "surrender all the advantages of her naval superiority," and this prediction was fully verified; for, having given this immunity to the neutral flag, there was little or no naval warfare. It cannot be said that the ships of England could not have harmed Russia, since she is a military power, and her fleets are weak; for had the rights been maintained, her commerce would have been exposed, and as this is of the most vital consequence to her, her men of war would have been forced out of their harbours to its protection. Had she then determined to resist, which is unlikely, a maritime war, defrayed by Russia, would have decided the quarrel, without expense, and without the loss of so many gallant men who fell before Sebastopol. A statement was made in the House of Commons (February 20th, 1855), which shows the importance of her foreign commerce to Russia, and the ease with which we might have coerced her by attacking it:—  
"At the outbreak of the war, the rouble fell from par, 38 pence, to 32 pence, and it was confidently anticipated that before the war had lasted many months, it would fall much lower; that a serious financial crisis would overtake the Emperor; that ruin and poverty would fall upon the landowners, and that national bankruptcy must ensue. . . . That our efforts have not met with the desired result is certain, but indeed the reverse. So far from our having blockaded the principal ports, the exports from that empire have been greater than ever. The whole case may be summed up in the statement that Russian commerce has not been injured, that

“ 10,000,000*l.* of English money, instead of 11,000,000*l.*, the ordinary amount, has been paid to her, and that the rouble, which had declined to 32 pence, has risen to par.”

Again, of what service was the French Navy to her when struggling for existence with Germany in 1870-71? France had spent millions on her fleets, and much enemy's wealth was within her reach, yet, owing to the Declaration of Paris, she was unable to use her marine—German property going safe under a Neutral Flag,—and was debarred from capturing that wealth, which permitted her rival to overrun one-third of her territory, and afterwards to extract from her 200,000,000*l.* of her money.

The Declaration of Paris has, therefore, destroyed naval action when war is being carried on against a purely military power. It would also make us lose our important carrying trade should we go to war, under its provisions, with a maritime country. This last proposition is so plain, that it is unnecessary to go into it here; but I would remind you that the loss of shipping is not an ordinary *commercial* loss; should our vessels leave us, our sailors would accompany them, and England would entirely lose her maritime character.

A very important question now presents itself. If Great Britain has yielded up her naval rights, on what else does she depend for defence? The whole of the Continent is armed to the teeth, England, the possessor of India, has vital interests which cannot permit her to separate herself from the struggles which are preparing, and which now seem to be reaching a crisis. The question is rising daily in importance; many things have been suggested, much has been tried, but have we succeeded? Do not let us delude ourselves into the notion, that we have not yet seriously tried to make ourselves a military people; for many years we have neglected naval weapons, we have forced ourselves to believe that national strength only consists in organized armies, we have seen and anxiously marked the processes by which Russia, Germany, Austria, and France have converted their huge masses of men into well-equipped forces, we have recognised the danger of our defenceless position, we have struggled hard to copy the Continent, and to provide ourselves with like armies, and yet, notwithstanding all our efforts, we are totally unable to compete with them, or to raise anything that would sufficiently vindicate our interests. The reason of this failure is simple; military power does not constitute the only defence of a nation, and it is an impossibility to draw the same resources out of Great Britain as those that can be drawn out of Germany or Russia, for the latter are essentially military states, the former is not.

To see this, it is only necessary to consider the habits and the employments of the people who compose different countries. Shepherd and agricultural races can devote more attention to military pursuits, than a commercial and manufacturing people; 1st, because they are more easily localized, and 2ndly, because their time is not so valuable. The former live scattered over the country, they are easily united in districts, for training or mobilisation; the latter huddle together in large towns, they continually shift their residence,

and it is very difficult to collect them for military purposes. The splendid organization of Germany, which arms at a moment the whole youth of the empire, from whose villages issue fractions of companies, and in whose provinces are assembled the perfectly equipped Army Corps, is quite inapplicable to this nation, where country labour only draws just sufficient workmen for its own necessities, and where the remainder crowd into manufacturing districts, and become lost in the circles of commercial enterprise. Again, the time of those who compose shepherd and agricultural races is not so much employed, as that of men engaged in trade as artisans; and the difficulties of forming the inhabitants into soldiers are far greater in the latter case than in the former. I would refer you to the very lucid explanations on this head given by Adam Smith, in his "Wealth of Nations" (Book 5, Chap. I, Part I). The time of English workmen is most valuable and expensive, and hard as it is for us to *show* on paper a force of under half a million, as our war strength, against the continental nations who each can show over a million, we should find it yet harder to *use* half so large a proportion of our estimated figures, as they could of theirs. It is our national characteristics which prevent us from being a military state (except, of course, as far as the excellence goes, which our troops have always exhibited), and to seek for the origin of our strength, we must not look to the masses of disciplined men which modern warfare requires, but to maritime power, as has been already indicated.

The Central Asian question gives great anxiety, yet when we understand our strength, the difficulty disappears. Sir John McNeill said that "the right of search which constitutes the maritime power of England, was a prudential weapon placed in the hand of England for the coercion of Russia." Mr. Cobden also said, "It is clear that nature itself has doomed Russia to a condition of abject and prostrate subjection to the will of the maritime powers." Both these statesmen here show that the exercise of naval rights is the way to check Russia. All danger fades away in India, from a Muscovite invasion, if England will only restore her power and re-establish her cruizers; the threat of war will then be quite sufficient to make the Government of St. Petersburg think seriously of the risk which it would run, by provoking our hostility.

There are some who, while they perceive the danger we are in, owing to the Declaration of Paris, console themselves with the idea that we shall tear it up the very moment we go to war. This I believe to be neither just, wise, nor likely. England has been at peace in Europe since 1856, and, therefore, during all the wars which have occurred since then, she has been a neutral; as such she has carried the goods of those belligerents who had not sufficient maritime power to defend their own trade, and consequently she has hitherto seen nothing but the sweets of the Declaration of Paris, and to the cost of those naval belligerents who found their enemy's goods thus protected. Is it right or honest that she should connive at this injustice, while she reaps advantage therefrom, and propose to upset it, directly it begins to hurt her?

But again, the military preponderance of Europe is not now—as it was in the beginning of the century—in the possession of one empire; it is shared by several powers, and is therefore divided. Yet, notwithstanding, England has not the influence she used to exercise, and our interests are suffering thereby; the reason is plain, having done away with our principal national weapon, we have not the strength to assert the independent policy which is best suited to our national welfare. Is it, then, wise to neglect this weapon (and to be powerless) in peace time? Is it wise to drift into whatever the military despotism of Europe may wish to impose upon us? How different is this supposition,—of thinking that we shall, on the eve of a war, abolish the Declaration of Paris,—from that true wisdom which is contained in the dispatch from Lord Heytesbury to Lord Cornwallis, British Plenipotentiary at Amiens, 1st January, 1802: “His ‘Majesty will never consent to place out of his hands, in a Treaty of ‘Peace, those means which may be necessary for the security of his ‘dominions in time of war.” And lastly, it is very apparent that the only reason why we have yielded our maritime rights, has been that the country has not examined the question at all; our long cherished traditions could never have been discarded under any other conditions. Who, then, will affirm that if we hesitate and neglect the subject *now*, we shall be able to abolish the Declaration of Paris when the confusion of a war overtakes us? We should *then* be seeking for allies, and those nations whose interests are opposed to ours, would engage neutrals to make us hold to what they would pretend to consider our engagements. Threatened by foes, threatened by neutrals, and opposed by a country who is ignorant of the value of its rights, what Government could carry out this change on the brink of a war? The Crimean War was conducted without naval rights; the Danes were dismembered in 1864, yet they did not tear up the Declaration of Paris, nor bring their strength by sea to help them in the war which mutilated their national power; and in 1870-71 the French held themselves bound to it. In fact, every war since 1854 has been fought *without* maritime rights, notwithstanding the fearful disasters which have befallen nations who neglected them; whoever, then, sees that the Declaration of Paris is *not* binding on us, and that it is dangerous to the country, cannot for a moment quiet himself with the supposition, that we should abolish it in the event of a war; the testimony of the history of the last twenty-two years entirely annihilates that illusion.

Now, in full peace, is the only moment; we have every right to break through the Declaration of Paris, as it is illegal and hostile to our natural rights, which no compact—even were this a compact, which is not the case—can destroy. By doing so now, we should show that we were influenced by principles of international justice, and not by feelings of self-interest, and as such, should receive the co-operation and applause of all honest men. If we do so we shall restore our vast power, and re-establish the influence we seem to have lost, and thus give the best interpretation to the saying:—

“If you wish for peace, be ready for war.”

**The CHAIRMAN :** Ladies and Gentlemen. I need not tell you that this subject is one of very great interest, not only in a naval but in a national point of view, and we may also say in a military point of view. I am very glad that one of my profession has taken up the sister profession, and shown the interest he takes in it. I am sure there are a great many here who will be very glad to enter to a certain extent into the discussion, and we shall be very glad to hear them.

— **The EARL OF DENBIGH :** I have some hesitation in speaking on this occasion, when there are so many Officers present who would speak to so much more purpose than I could upon this most important question; but as it is one in which I have taken very great interest, and on which I have on two occasions spoken in my place in Parliament, I cannot refrain from expressing my appreciation of the admirable way in which Mr. Ross has brought this subject forward. His treatment of it has been so exhaustive that it leaves scarcely anything to be said. He has particularly touched upon one question which I think has not been touched upon before. When I asked the question in the House of Lords whether the Declaration had ever been ratified by Her Majesty, I drew from the Government that there was no ratification of any sort or kind by Parliament or by the Crown; but I have been met by the answer that as we have been silent now for twenty years, we have, as it were, condoned it, and that we are in that awkward position that we could not withdraw from it without dishonour. It has also been urged that as there is a great deal of loose gunpowder lying about in the world just now, this is not exactly the moment when we ought to take the initiative and withdraw from this position. I cannot say that I concur in this view. I think it is precisely because there is so much gunpowder lying about in the world that we ought to do so. We have already taken one step which has shown that we are not afraid of standing by ourselves, and we have therefore received the approbation, I believe, of the rest of Europe. We are, therefore, in the position at this moment of being able to say, "We have taken a false step, "we admit the falseness of the step. We have forfeited thereby in a thoughtless "moment our natural rights, of which no one could deprive us, and of which we had "no right to deprive ourselves by any act whatever; and therefore, as an honourable "nation, we desire in this time of peace, when we cannot be accused of any wish of "aggrandisement, to withdraw from our false position." I believe that this would put us in a position in which we could hold our own, and I might even say dictate to the world. There was a clap-trap sort of answer offered to me, which—

**The CHAIRMAN :** I hope we may a little avoid anything that tends to clash with the proceedings of Parliament. We are a military and a naval assembly.

— **The EARL OF DENBIGH :** This touches the question as to the humanitarian principle. One reply made to me was that as we had given up attacking private property on land, we were therefore not to attack private property on sea. That has been touched upon most admirably by Mr. Ross, and it is one which naturally strikes people on the first consideration of the matter. The other is the humanitarian question as to whether it is right to impoverish so many people at once, as would be the case if we stopped the whole commerce of a nation. That is taking a very improper view of the question, because surely it is much more humane to take a person's money than his life; to impoverish some thousands of people than to blow them into space by all these diabolical engines that we have now prepared for that purpose. I am very loth to take up your time, but I cannot help thanking Mr. Ross for having brought forward these two points which were given as answers to me when I dealt with the question. I hope they will be thoroughly ventilated in the further consideration of this question.

**Mr. STIRLING LACON :** I, following the noble Lord, may say, that although this question has not received the ratification of Her Majesty, I believe the declaration of Paris was signed in Paris by our Ambassador, and has also received the sanction of both Houses of Parliament. (No, no.) I may be wrong, but my reason for asserting this is, in order that we may put the fullest information upon this subject before our members who will read this discussion. I have been informed it has received the sanction of both Houses of Parliament, although it has not received the ratification of Her Majesty.<sup>1</sup>

<sup>1</sup> "The Treaty of Paris was approved by the House of Commons without a

Mr. BUTLER-JOHNSTONE, M.P.: If I may be allowed to answer the question, the Declaration of Paris has never received ratification. First of all, it was never signed by the command or mandate of the Crown. It has never been ratified by the Sovereign, and it has never been approved by either House of Parliament. From the very nature of the case it could not receive the ratification of the Crown, nor the approval of either House of Parliament; and for this reason:—It is not a treaty, but a simple declaration; a declaration indeed far more sweeping than a treaty, because a treaty is a compact between different nations, whereas this is a declaration, which is to bind the country in future wars with all nations, and with reference to all neutral nations. The object of the Declaration of Paris, as stated in the 23rd Protocol of the Conference, was to attain uniformity of maritime law, whereas formerly there was a difference of opinion and of practice between nations. Therefore, until all the nations of Europe, and also of the other continent, had agreed to this Declaration of Paris, it was premature at any rate for any of the nations who had signed that declaration to ratify it either through the Sovereign or through Parliament. When that declaration became known in this country, there was such an indignation among those who knew what the meaning of it was, that motions were made in both Houses of Parliament, by Lord Colchester in the House of Lords, and by several members, especially Mr. Phillimore in the House of Commons. Lord Colchester was supported by Lord Derby, Lord Carnavon, Lord Hardwicke, Lord Albermarle, and several other members; in fact, by the general feeling of independent members on both sides of the House. But Lord Palmerston was the triumphant Minister of a triumphant country, at the head of an overwhelming majority, and it was impossible, in the teeth of that majority, and in the teeth of the general jubilation which took place upon peace being made, to carry motions condemnatory of the Government. Therefore Parliament has not actually condemned it, but no English minister has ever dared to come forward, and ask the ratification of Parliament for this declaration. Lord Denbigh has said, that there has been silence on the part of Parliament and of the Government since the Declaration.

“ division, and on the 22nd of May following, a motion was brought forward by Lord Colchester in the House of Lords condemning the code of maritime law contained in the declaration appended to the treaty, and especially that article which exempted enemies' goods from capture, while under a neutral flag. The motion of Lord Colchester was rejected by a majority of 54.”

When the treaty was laid before Parliament, it gave rise to animated debates in both Houses. On the 6th of May, Mr. Robert Phillimore, in the House of Commons, called attention to the subject in an able and exhaustive speech, in the course of which he expressed his “irreversible conviction of the great sacrifice of maritime rights which Great Britain had already made, and was still further making by the declaration contained in this Treaty.” He further said, “that it was because he thought that the abandonment of that right would prolong and not diminish the horrors of war, that he was opposed to it;” and he concluded in these words:—“He could not help thinking that a right had been parted with, of the value and importance of which the country was not aware, and that we were now under an obligation to admit, in the face of the whole world, a principle which it was most inexpedient to part with, but which we had no longer the right to enforce;” and in the House of Lords, on the 22nd of May, the Earl of Derby, after a masterly review of the arguments adduced on either side, concluded as follows:—“Suppose, which God forbid! that a war should arise between this country and France, what means have you of opposing her, except by closing her up hermetically, and stopping her commerce? Well, what are you to do? You cannot blockade the whole coast of France; but you can practically prevent her from sending out one single bale of merchandise—your new law permitting French goods to go with impunity on board neutral vessels comes into operation; you have no blockade. France gives up her whole commercial marine; she makes her vessels into vessels of war; she has seamen to man them, and before your very face she carries on her whole commerce under the Prussian or American flag. Your power is gone; your right arm is cut off; your only means of defence are abandoned, and abandoned too at the suggestion of France. If I stood alone I would support the resolution of my

tion of Paris. If there had been silence we should have been in a far better position than we are now; but in consequence of the declaration, and the protocol which preceded it, there have been negotiations with something like thirty or forty nations asking them to sign the declaration. Fortunate it is indeed for us that among the nations to whom we went cringing and begging to join with us in signing away our natural weapons, and our supremacy at sea, and the defences of our country, two important naval nations, viz., Spain and the United States, have, as a matter of fact, refused to do so. In the face of Spain and the United States, what does the recognition given to it by nations like Switzerland or Bavaria signify? The fact is, Spain and the United States have saved us, and now we are able to say, "as uniformity, which was your object, has never been obtained, we will recede from "this one-sided declaration, which is aimed simply and solely at maritime nations, "and especially at the maritime superiority of England." Other nations who signed it say this,—"We will consent not to make war upon sea where we are weak, "but only upon land, where we are strong," whereas the meaning of England signing it was,—"We will consent to make war upon land, where we are weak, and not "upon the sea, where we are strong, and where hitherto we have been supreme." A declaration more fatal, because it was absolutely destructive, even of the existence of this country, I do not believe it is possible to conceive. There are one or two points in this lecture which I wish to mention. Certainly, as Sir William Codrington has said, I do not know any army so happy as that it should not have been a naval Officer coming forward, who might be open to the suspicion of asking for prize money, and protesting against prize money being taken from the navy; but that it is a military man, who knows the defence of the country means war equally upon land and sea, who comes forward and points out in detail where this miserable declaration cuts the ground from under our feet. In 1856, we had been attempting to transform ourselves from a naval into a military nation, and from a naval nation of the first strength into a military nation of third or fourth-rate strength. They talk of standing armies—why, there is no such thing as a standing army now in the

"noble friend. I would divide the House upon the question. I would give to "every one of your Lordships the power of recording your opinion as to the "wisdom and the safety of these proceedings. But, for my part, I solemnly protest, "as derogatory to the country, as inconsistent with its dearest interests, as fraught "with danger to its future greatness and power, aye, to its future safety; I protest "against the abandonment of rights involved in that which, with all respect for his "personal qualities, I cannot but characterise as the miserable Clarendon capitulation of Paris."

And the writer of the pamphlet from which the above quotations are made, says, "The practical question then remains, what is to be done in the event of our being "engaged in a war with any great naval Power? Are we to adhere to the Paris "declaration, or are we to resort, in spite of all the consequences, to the practice of "former times? We believe we may venture, without presumption, to answer "this important question. We believe that on the very first occasion in which we are "involved in a serious naval war, the Paris declaration will be cast aside, as other "declarations of a similar kind have been before it. We shall be compelled, from "sheer necessity, to resume that legitimate weapon of offence which we have so "recklessly thrown away. It may be said that we did not resort to it during the "Russian war. But that is not an example in point, for there was then no naval "contest, the sea from first to last being in possession of the Allies" "Of the "perilous character of such a step it is almost superfluous to speak. It might "involve us in hostilities with every one of the Powers that were parties to "the Paris declaration. It might lead to the formation of a third armed neutrality "more formidable than either of its predecessors. Even if it did not lead to active "measures of resistance, it would certainly excite against us the cordial ill-will of "every naval Power in Europe. We should, at the very least, be charged with a "most flagrant breach of faith. But in the case supposed, we should have no "alternative but to encounter all these perils, and brave all accusations, or to resign "without a struggle, our maritime ascendancy."—"Our Maritime Rights," 1860, by John Hosack, of the Middle Temple, Barrister-at-Law.—W. S. L.

old sense of the term ; there are nations standing in arms with their whole manhood enlisted in their army and reserves, and what of England ? England, with her little brave army, that has in history done such marvellous acts, ready to a man to sacrifice their lives, what can a corps d'armé, like the English army, do against the military standing nations of the world ? Why the thing is impossible, and for this reason. We are a commercial and manufacturing nation, instead of an agricultural nation like others ; and what is the meaning of being a commercial and a manufacturing nation ? It is that our skilled workmen, earning five shillings to ten shillings a-day, cannot afford to go and fight in the ranks of an army where they are only paid one shilling. Our state of civilization makes it impossible to have recourse to conscription without something like a revolution in this country, and a nation having an army without conscription cannot by any possibility hold its own against nations having recourse to conscription. The consequence is, we are left essentially a naval nation, the army of course co-operating in its own sphere with the navy, and this Declaration of Paris absolutely destroys that naval superiority. If the country will only comprehend it, and nothing can make the country comprehend it so well as lectures like this—if once the nation comprehends this, I make no doubt that it will take the matter into its own hands, and will, in time of peace, which is the only honourable time to do it—it would be perfectly dishonourable to do it in time of war)—now in time of peace, the nation will insist upon the abrogation of that declaration.

My friend, Lord Stanley, reminds me there is a point about privateering. The fact is, we were unfortunately led, during the American struggle, to look upon a pirate, like the "Alabama" was, as a privateer, and consequently we are led to look upon privateers as pirates. Now, what is war ? War is a declaration of death against your enemy for doing you injustice. Other nations have no right to send their sons to fight in a quarrel which is not their own. If you go and send men to fight for another nation, that is piracy. The "Alabama" was purely and simply a pirate ; she was fitted out and equipped in English ports in a quarrel which was not England's. But the question of privateers is very different ; it is a mere means of warfare. Whether you send commissioned Officers in vessels that you hire, belonging to the merchant service, or whether you give letters of marque to private individuals, is a mere matter of detail. But the question of privateers has little to do with the Declaration of Paris. The question of the flag covering the cargo is a question of the object of war itself. What the Declaration of Paris did, was to allow neutral bottoms to carry enemy's goods, and neutral bottoms carrying enemy's goods means that England has no power of compulsion over her enemy's commerce, which is the natural weapon of England. Go to war with any nation you choose—France—you are liable to invasion from her. What compulsion can you put upon France ? Stopping her commerce. Go to war with America. She can invade Canada with overwhelming forces. What compulsion have you, except by putting compulsion upon her commerce ? You guaranteed Belgium. I do not know anything so monstrously presumptuous as that guarantee, if you do away with the single force by which you can compel your enemy to do justice, viz., compelling him on the sea, where your strength lies, and in the commerce which you can take away from him. This cannot but be a very important subject to Englishmen, and the one thing necessary is to enlighten them upon the subject, and nothing can do that better than lectures, such as that which Captain Ross has given us to-day.

Mr. MARX : I should like to draw attention to the power given to a ship-of-war and that given to a privateer. A ship-of-war has a commission to "sink, burn, and 'destroy ;" a privateer has no such commission. I am speaking in reference to the "Alabama" claims, and also to do away, in some measure, with some of the objections and prejudices against privateers. Their commission is to capture and bring into port, for adjudication ; they having no right to sink, or burn, or destroy.

Commander CHEYNE, R.N. : Having listened with attention to the lecture, I venture to suggest, if agreeable to Lord Denbigh and the Committee and Lieutenant Ross, that Lieutenant Ross's lecture should be placed at the disposal of the Council of the Lecturers' Association. Lord William Lennox is Vice-President of that association. I am on the Council myself, and I think, if it is not objectionable, I might lay

copies of Lieutenant Ross's lecture before the association. I think it would then be taken up by the lecturers throughout the country, and when the constituencies throughout the country get hold of the main points of the lecture, it might be made a crucial question at every election, so that we might be able to extract a pledge ——

The CHAIRMAN: We will not go into the political part, if you please.

Captain CHEYNE: I will drop that point. At all events, I think it would be a means of spreading it universally throughout the country, and I am certain the Council of the Lecturers' Association would take it up. I have already sent the programme of the Committee to the organ of that association, called the *Lecturers' Institute*, a newspaper published monthly, and I am sure it will be well received. And, if I am authorised to do what I now suggest, I think it would be the means of enlightening the country on this important, may, perhaps vital subject.

The CHAIRMAN: It is the rule of the Institution that the lecture becomes the property of the Institution, and as we are here, not as a Council, but merely as a general meeting, we cannot deal with this matter. I will take care that the proposal shall be put before the Council, in order that it may be considered.

Lord STANLEY OF ALDERLEY: I desire to congratulate the Institution upon the lecture that has just been read; and, as a sign of the progress made in this direction, it is very remarkable that no objection has been made to any of the statements contained in the lecture.

General CAVANAGH: I should like to refer to one remark which was made by the lecturer, namely, as to the effect that the loss of shipping caused by the superiority of a nation with which another nation may be at war, has upon the future prosperity of the weaker power, owing to the seamen manning the ships. The "Alabama" happened to be in the Eastern Seas during the time I was Governor of the Straits Settlements, and the consequence was, the whole of the American commerce was completely paralysed. Several American vessels were lying in the harbour of Singapore, unable to leave. The Americans, as a nation, were perhaps too proud to try and get by a side-wind what they could not secure by their naval superiority. Hence, they did not attempt to nominally transfer their vessels to the British flag, and the result was, they were obliged to sell them on unfavourable terms. From that date, I believe, we may trace the decline of American commerce and of its commercial marine. Subsequently, when a war was supposed likely to break out between France and Germany, the Germans adopted another course. They immediately applied for letters of naturalization. Had these been issued, they would have sailed under British colours, and their commerce would have been saved. I cannot say that I agreed to the arrangement. I considered that, as they had not in time of peace expressed any intention of applying for letters of naturalization, I was not justified in giving them in time of war, and I consequently felt myself compelled to refuse their request. I think this shows the effect that the Declaration of Paris has upon commerce in time of war. Had I granted these letters of naturalization, the German commerce would have been carried on, in their own vessels, perfectly uninterrupted, and without Germany suffering, in the slightest degree, from the superiority of the French Navy.

Major POORE, R.M.A.: The American mercantile marine has not yet recovered from the effects of the "Alabama." America also furnishes, with another episode, an example of naval action. Paul Jones, with a few ships (three, I believe) spread a panic over the whole of this country, coming suddenly and acting on the coast and shipping.

As we stand, unless we make the sea our defence, we become powerless, as the sea, unless used as a defence, becomes an easy high road for any nation to attack us. Again, the sea, from the nature of our possessions, holding as we do nearly all the best harbours in all quarters of the globe, gives us a base of operations in every part of the world simultaneously.

This matter of the possession of harbours is one of the distinguishing points between the action of lawful cruisers or privateers and the "Alabama." The Southern States, having free possession of no port, had nowhere whence they could lawfully equip a cruiser or run prizes to, and though the "Alabama," &c., is illustrative of part of the subject, the Southern States were not in the position that

we should be, possessing, as we do, ports in all parts of the world, which gives us the advantage of short and convenient distances to run our prizes to, in comparison to other nations under similar circumstances, giving us, in time of war, a base of naval operations in every quarter of the globe, which powerful position, if understood and properly acted on, can hardly be overrated.

Captain CARMICHAEL, 5th Lancers: We ought to be much obliged to Mr. Ross of Bladensburg for bringing forward this question; and I agree with what previous speakers have said, that such a lecture as this comes more gracefully from a soldier than from a naval Officer. We have latterly, and especially at this Institution, been inclined to aggrandize the Army, trying to make it popular, and, to a certain extent, overshadow the Navy. I, as a soldier, wish to point out why we can never be a great military nation in Europe. In Asia we may be, but in Europe we never can. The area of England is so small as compared with other countries, that, as population increases, they daily become, as military nations, more powerful in proportion to us. But the naval power of a nation is dependent on the extent of its coast—a fixed quantity, which cannot alter—and, since we have a longer coast line than other continental powers, we must ever remain superior as a maritime nation. I think, also, our people—accustomed to free institutions—will never endure that internal interference, by which alone the enormous Armies on the continent are kept up. But, although our patience is short, we have a very long purse, and I believe we could endure an amount of taxation that would drive, even the conscript nations of the continent, into rebellion; and the way in which we can best spend our money is on the Navy, in those monster guns, and those ironclad ships, whose enormous cost other nations are less able to afford.

Captain J. C. WILSON, R.N.: I should like to say a few words on this very interesting lecture by Lieut. Ross. I will repeat almost what Captain Carmichael has already said. It has come much more gracefully from a military Officer than it would from a naval Officer, because we might be accused of pleading for ourselves. Self-interest might have induced many men to work up this subject, whereas he and also several military Officers who have spoken, particularly Captain Carmichael, on principle advocated our maritime rights, besides referring to the profession to which I have the honour to belong in the most generous terms, showing that they are quite as ready to advocate anything connected with it as readily as they would matters more immediately belonging to their own profession. However, this is really and truly not primarily a professional, but a national question, a question of such vital importance that no one can speak too strongly upon it. And perhaps, in passing, I may say the only objection I have to Mr. Ross's admirable paper is, that it has been too exhaustive. It has left nothing for any one else to say. He has so gone into the question, and given us the history of everything touching it so thoroughly, that he has really left nothing unsaid. That his paper has been very conclusive I think we may almost at this early stage of the discussion take for granted, from the fact that we have not yet heard one dissenting voice. Every one has been in favour of his views. I only regret that we have not had some person here (though possibly some one may yet rise) who will take up the opposite side, and advocate the ratification of the Declaration of Paris. What Mr. Ross has most clearly laid before us is, that the trade of a country is the sinews of war, and that without trade, war cannot be prosecuted, and if it is entered into, and the trade of the country is cut off, in a very short space of time it must succumb. I think no more telling paragraph is to be found in his paper than that in which he quotes from a speech made in Parliament, and where he shows that the rouble in Russia fell 20 per cent. at the declaration of war, but immediately rose again to par when it was discovered that their trade was to pass undisturbed under neutral flags. We say the Funds are the pulse of the country; if so, it shows that the Russians very soon recovered from what they felt to be a severe shock. If the Funds of this country fell 20 per cent., most Englishmen would consider we were in a very critical condition. Both Captain Carmichael and the gallant lecturer pointed out that a great deal more attention has been lately given in this country to military matters than to naval. There can be no doubt that such has been the case. I am not going to enlarge upon the drawbacks of the Navy at the present time, but I may say the same attention has not been given to the Navy which ought to have been,

ard that it even now, at this critical time in the history of England, is not in the state it should be. Everything they can send out of the dockyards has been commissioned for the Mediterranean, and to save the country from annihilation, another ship could not be ready under three months. I ask you all whether such is a state for the country to be in with an Eastern Question on us? It is not, as a rule, in the material of war we shall ever fail, with our enormous factories, our iron works, and our coal, we can never run short of material. Besides, our coal mines, our iron shipping, and other interests are so well represented in the House of Commons that the *matériel* will never be neglected; but in the *personnel* of the Navy we are always far below par. On the Merchant Service of this country we must rely for our men; sooner or later we must fall back upon it. We have got now a system of rearing our own men which does very well for peace, but for war purposes it cannot stand. We have a small reserve, which at the best has never been tried, but if what we read every day, and what we have heard in this theatre lately, be true, we have been living ever since the abolition of apprentices upon capital, using up men without taking the trouble to rear others in their place.

The CHAIRMAN: You are getting a little beyond the point.

Captain WILSON: It is simply touching on what the gallant lecturer says. I say we have no resources to fall back upon in time of war. Our maritime forces have been steadily neglected. That is what I wish to enforce.

The question of the flag covering goods in neutrals has been so clearly put by others that I will only touch upon it in the way it appears to myself. The men will follow the ships, as all history shows, especially the late American war, where the commerce of that country disappeared, and with it the seamen, so that they could not man their ships of war. Their navy was increased from some 50 ships to 600, but they had no men, no native sailors, because they had followed their ships. If our commerce is transferred to neutrals, the men will surely go with the ships, and we shall not get seamen when we require them for war. There is another view to be taken of it. Napoleon said he only required the command of the Channel fifteen days to invade England. If he could do it in fifteen days with sailing vessels, I suppose forty-eight hours would be enough for one of the great military powers to do so now, if they only had command of the Channel. But the thing they have always been wanting in, is transport; but if the bulk of our ships are transferred to neutrals, surely it is but a step from them to our enemies. From a neutral it would be a very easy thing to get ships, and you might be invaded by means of your own vessels. The idea may be far-fetched, but it is quite possible. As has been shown, the stoppage of the export of raw material from Russia would probably have brought the Crimean war to an end much quicker than it was, and so long as we have the command of the sea, and can use our rights on it, we can always keep her aggressive policy in check. There is just one point in which I may say I do not quite go with the lecturer, and that is on the question of privateers, although I have heard a good deal said to-day in favour of them. I do not think that war is thing into which private speculation should be allowed to enter. I think all cruisers, like other machines of war should be under Government, and fly the Government flag. I do not mean to say by that I would not utilise the Merchant Navy, and I also think it would be a very good thing to utilise private enterprise to a considerable extent, for it would be quite possible to do so without recurring again to privateers. For instance, on shore, if you use volunteers, you would place them under military law and discipline; in the same way every vessel that calls herself a ship of war should be under Government. You might treat ships very much in the same way as in the Russian war you treated regiments. You give certain Officers the power to raise regiments and command them; in the same way you might take picked Officers from the Merchant Service or Royal Navy, and give them the command of ships they could fit out and man, but I object to privateers in the ordinary sense of the term. Besides which, I almost doubt whether as a great commercial nation, we should gain at all by employing privateers. I observed in the *Contemporary Review* of last April, in an admirable article, written by Mr. Brassey, a curious fact, viz., that between the 1st February, 1793, and the 31st December, 1795, the French took from us 2,095 merchantmen, whilst in the same time we only took 319 vessels, therefore privateering appears to have been rather against us than

in our favour. However, this does not alter the main question at all, it is merely a matter of detail. I will not say any more, excepting to express the very great obligation we are under to Mr. Ross for having taken up a question which is so deeply interesting to all Englishmen, but especially so to us belonging to the Navy.

**Captain Scott, R.N.:** I think the Army men, as a rule, push the naval men forward, and if the naval men do not go forward fast enough, it is their own fault. In a recent paper by Mr. Brassey, he mentions that Admiral Porter states that in a war with England the United States in the course of a very few months would drive the English trade off the seas, so that it is very evident that they have no intention of agreeing to the Declaration of Paris. The United States might possibly hereafter join in alliance with one of our present friends with whom we had been, say, some months at war. Our friend, like ourselves, agreed to the Declaration of Paris, but the United States did not, and hence we should be put in a very awkward position, and might suffer serious injury before being prepared for the new combination. There is no doubt that our mercantile marine is a very great source of strength, though I am sorry to say that latterly measures have been taken which would not make it so, and we have no organization for developing its power; but as I am going to enter into the whole question shortly in a paper I am preparing to read at this Institution, I will say no more about it at present. When we see so many members of Parliament take up the matter, I have no doubt it will be brought before it and taken up by the country. Lord Denbigh has on several occasions assisted naval men and measures, and I hope he will not fail to bring this matter forward again, and no doubt it will be then successfully carried through the Legislature.

**Mr. C. D. COLLET:** With regard to the question of privateering, I beg to call Captain Wilson's attention to one point, that in war there is always a difficulty. Even in such a war as the old French war, when the Government and people were together, there is always a difficulty from the routine which the Government exercises, and for that purpose it is absolutely necessary that the old system of privateering, by which private individuals should not be debarred from exercising their patriotic inclinations, should be continued. The regulations on that subject are very strict. Every privateer has to give security in a large sum of money that he will conform to the law of nations, and if he violates it—if, for instance, he ill-uses a neutral, that neutral has the opportunity of suing him in a court of law. The thing has been done, and the privateer has had to give damages. But the question is altogether separate from that of the flag covering the cargo, and so much so that Lord Clarendon himself inspired an article, in which he showed that if we were at war with America, the Declaration of Paris would not prevent us from using privateers. The point of difference is this: the neutral really does get a benefit from carrying on the trade of the enemy, and therefore, if we did really make a treaty with a neutral to permit him to do so, we should be bound in honour to carry it out. But it makes no difference whatever to the neutral whether the goods of the enemy are taken by a privateer or by a Queen's ship, and therefore that portion of the Declaration of Paris falls through for want of meaning. In the war with Russia our enemy was allowed to have many advantages. Every sailor in that war was under a distinct Government Officer, and of course could only do that which he was ordered to do. Of course, a privateer must act independently, and that independence is quite necessary if we are to continue the patriotic exertions of our own people.

**The CHAIRMAN:** There is no doubt the discussion that has taken place has shown the very great interest that every one, both from a naval, military, and national point of view, takes in this important question. One thing I may say as a military man: it was remarked that we can never be a great military power on the Continent. That is rather a strong expression to let pass without comment when we know that Marlborough fought his battles upon the Continent, and Wellington did the same. I think those are rather strong cases against the positive statement which has been made.

**Mr. Ross:** I am deeply sensible of all the kind things which have been said of me to-day, a great deal more than I deserve. I think the discussion has been so one-sided, we may say, that I really have very little to add to what has been already remarked. I have only a few words to observe upon what Captain Wilson

said about privateers. I think the great objection raised against privateers has been more on account of their name than anything else. People dislike the word. The Germans during the late war wished to institute privateers, and they called it the "Voluntary Marine," but it was exactly the same thing.<sup>1</sup> The Officer in command of the ship was to be a Crown Officer, in exactly the same way as the Officer in command of a privateer is—for the time being—Crown Officer; that is, during the war he has a commission from the Sovereign, constituting his ship for the time being a legitimate cruiser. The difference is only in the name. The great abuse that privateers have had, dates principally from the time when England and Spain, in the beginning of the last century, were engaged in a sort of chronic war in America, and in which a great deal of buccaneering went on under the name of privateers; but I do not think, in the legitimate employment of privateers we can find any fault. Then, with regard to what has been said that we should lose by restoring privateers, I think it is the other way. I saw Mr. Brassay's paper, and, if I remember rightly, his numbers were something like 2,000, instead of 1,000; that is, that we lost 2,000 ships, while the French only lost 300, up to December, 1795. The losing of merchantmen, however, does not altogether measure the loss of property. A great deal of French property at that time went under other flags, which was captured, although during the first part of the war, the English, on account of some Orders in Council, allowed neutrals to carry a great deal of enemy's property, which was therefore not confiscated. This, I think, quite shows how it was that we lost so many merchantmen in comparison with the enemy; but as far as the loss of property went, it was quite the other way: the French were entirely crippled in the first part of the war by their losses in actual money.

Captain WILSON: So long as the privateers are under the Crown, I have no objection to them at all.

Admiral Sir BROOKE MIDDLETON: Privateers, always during any war I have ever heard of carried a pennant showing that they were under the Crown.

Mr. Ross: As Mr. Collet has also remarked, privateers are always obliged to give security, and they are national ships. The "Sumter" was merely a New Orleans steam-ship. Two or three guns were put on board, and during its short cruise, seventeen of the northern merchantmen were taken, which shows that we could do the same thing. I have only one more thing to say—I hope that this subject will not be allowed to rest here, and that every one who has attended this meeting to-day, and who has been convinced that we made a mistake in 1856, and that it is necessary for us *at once* to resume our maritime rights, will, according to their several ability, do the utmost they can to impress it upon all whom they meet to try and get the fatal Declaration of Paris abrogated.

The CHAIRMAN: I am quite sure I may ask your thanks to the lecturer for his very able and interesting lecture.

<sup>1</sup> *Vide* "Further Correspondence respecting the War between France and Germany, 1870-71," (No. 1) page 20, where the German Decree is to be seen.

## LECTURE.

Friday, June 16, 1876.

ADMIRAL SIR HENRY J. CODRINGTON, K.C.B., in the Chair.

"THE MARITIME DEFENCE OF ENGLAND, INCLUDING  
"OFFENSIVE AND DEFENSIVE WARFARE."

## PART I.—THE ORGANIZATION OF OUR MARITIME FORCES.

By Captain R. A. E. SCOTT, R.N.

In the short space which has elapsed since I commenced the paper now in your hands, the manly and vigorous policy of our Ministry following up their purchase of a vested right in the great highway to India and the East, has for the moment vindicated our national position. The rapid changes, however, which have been truly marked by the money-market barometer, show what is still in the air, and prove the wisdom of the proverb, "If you wish for peace, be prepared for war."

If my paper should call greater attention to this necessity in a country the wealth of which is mainly a floating capital—our maritime trade, according to the *Morning Advertiser*, amounting annually to the enormous sum of 700,000,000*l.* sterling—I shall be amply repaid for the time spent in its preparation.

Before commencing from the stand-point of a few days since, I wish to remind you that the Mutiny in India happily found us with the veteran soldiers of the Crimea ready to our hands, and that on the other hand, the French, proud of their laurels there, and at Solferino, were never more confident of success than when they marched towards the German frontier.

We at the commencement of many a former war, have paid dearly for our own over-confidence, and have had to sacrifice not only vast sums of money, but also the far higher treasures of human life, before the pluck and dash of our soldiers and sailors, backed by the energy of our people at home, enabled us to pull through all obstacles with *ultimate* success.

The present time is ours; and I venture to think that at a very small outlay, we may *at once* make our preparations so complete, as not only to place our country in security, but also to make her so strong (by uniting her vast resources) as to preclude attack.

Were this done, our country would be enabled to maintain her position as the arbiter of Europe, and to use manfully the strength with which the "Giver of all" has so richly endowed us for the benefit of weaker nationalities.

I find that it is impossible in one lecture to go fully into the question of naval attack and defence, and to show the improvements which could be easily effected, and might be quickly carried out so as to double the fighting capabilities of our existing ships. I also wish to indicate the requirements of *future* war vessels from a sailor's point of view, having *due regard* to the full utilization of our present iron-clads and unarmoured cruisers. I therefore trust, that the Council of this Institution will permit me to bring these matters before you within a few days, and thus enable you to judge as to the necessity for initiating in the work-shop and drill-shed, and in carrying out other needful preparations, the vigour just shown in handling that national weapon, the British fleet.

In stating that we are a maritime people, and that we cannot maintain our position among nations if we suffer our naval force to decline, I lay myself open to the charge of uttering truisms, but they are truisms of such vital importance to us, and their truth is so constantly ignored in our measures, that I believe they cannot be too constantly dinned into our ears.

It will appear incredible to our descendants that it was left to a young Officer of the Guards publicly to point out to the English people that some twenty years previously we had voluntarily waived those maritime rights which constituted our only real defence in time of war. As Mr. Ross-of-Bladensburg states, "This, in a nation like "our own, could only have become possible when a veil of forgetfulness "and ignorance had dimmed the vision of the real cause of our former "success;" but how are we to account for the fact that whilst acknowledging as truisms the statements with which I have commenced my paper, we have done our best, and still strive after the unattainable position, of vieing with continental powers in maintaining *large* military forces? If anything could convince the nation of its folly, it would be the lecture of the young Officer who called our attention in this room last week to our "neglected maritime rights;" and I am glad to follow up that interesting lecture with a few words of caution on our "maritime defences."

Such words were never more needed than at the present moment. The political position of affairs is becoming more complicated, and an explosion may at any moment be looked for when all the conditions for a discharge of war-tension are so favourable as at present. Germany already possesses an active army of 1,200,000 men, and has, according to Count Moltke, an additional territorial force of 1,000,000 soldiers as a reserve. Russia has a force which, as Lord Derby tells us, "could be made up to exceed those numbers," governed by "the "most peaceful of monarchs" (see the *Times* of 28th January last), and yet "as great a conqueror as Alexander, Cæsar, or Napoleon . . . . " forced by an instinct stronger than his will, which drives his people "southward and eastward to take possession of a territory three times

"the size of Germany." France is already repossessed of immense wealth, and is eager to recover her lost prestige, and these and other nations are all anxiously looking to what recent events in Turkey may force upon them.

How unreasoning we are! We admit all these elements of danger; we admit that our "very existence" as a nation depends upon our Navy; whilst urging the superiority of our fleet to that of other nations, we are obliged to confess that a reverse on the seas is *possible*, and that if a continental army once landed on our shores, we should run a chance of being blotted out from amongst the great powers. When we know on good authority that we are dependent even for the food of half our people upon a maritime trade passing over sea, and therefore particularly exposed to destruction in war time, we at once feel the truth of the observation, and yet we fail to make our ships, including their armament, as efficient as they may be made, or their number as great: we neglect to use the means which offer themselves for manning and maintaining them efficiently; we voluntarily give up our powers of destroying the commerce of our enemies; and we content ourselves with protecting our coasts with torpedoes which are almost as dangerous to ourselves as to our enemies.

Let us look at the first point I mention for a moment—the efficiency or inefficiency of our ships. I do not here propose to examine this critically. I wish merely to call your attention to one or two national characteristics, pluck and dash, which indicate the nature of the armament most suitable for us.

Before, however, entering upon these points, I must allude to one requisite in a good ship of war with which we cannot dispense, viz., "unsinkability." Unless a vessel can be kept afloat, of what use can be the finest crew, the most powerful weapons, and the highest speed? The "Captain" was a capital fighting machine as long as she could be kept afloat; and both the "Ré d'Italia" and the "Vanguard" were powerful engines of war, but what did this avail them in the hour of trial? I would therefore premise that this all-important requisite is a point in which some of our present ships would appear to be deficient, and that in my opinion the under-water deck, excellent as an additional means of defence, is not calculated to remove the defect. I hope, however, to be allowed to go into detail on this and other important questions in a future lecture.

The next point is that her weapons of offence should be such as our men would be likely to wield with success. Amongst such weapons I would almost, if not quite, give the first place to the ram. The nerve, coolness, and resolution of our seamen is proverbial among nations, and the ram is a weapon which could only be used with advantage where pluck and coolness go hand in hand, and where the resolution is well supported by the skill to direct the blow—yet several of our vessels are not armed with it, and of those which have it, some are too weak in the bottom to support the shock of impact with an opposing vessel of heavy weight. If, again, we look to the guns, we are not quite in such a position as I should like to see us.

We have at this moment only four 35-ton guns at sea in one ship,

the "Devastation," and two 38-ton guns nearly ready, with two more 35-ton guns, the sole armament of her sister ship, the "Thunderer;" but before we have at all assured ourselves that we have obtained from them the greatest results of which they are capable, we jump at once to 80-ton guns for no other reason apparently than to outdo the Italians, who first talked of 60-ton guns, and then to outstrip our 80-ton guns in size went to 100-ton guns. Will it not surprise some at least of my hearers, to be told that no 38-ton gun has yet been tested up to 100 rounds, or even a third of that number in quick firing; and that, so far as our experience goes with guns of heavy calibre, the metal of which the projectiles are composed, will not bear the pressure which it is necessary to put behind them in order to get up a moderate velocity. The shot of the 80-ton gun show a sensible enlargement of diameter, arising from the compression in the direction of the shot's length.

Whilst, however, we have waded into unknown depths in the direction of big guns, we perpetuate known defects in respect of those of smaller calibre. We know that an 18-ton gun will pierce the thickest armour-plating afloat, we equally well know that a 12-ton gun will not do so, and yet the "Sultan" and "Hercules" are the only two broadside ships afloat which carry guns of the former size.

We adhere to cast iron for our projectiles. We found chilled shot the best thing known at one time, and we adhere to them, regardless of the superiority of steel. The result of this is, that the round form of front has to be adhered to; for, were the front *flat*, the projectile would break up on impact. But, as the flat-headed shot will bite at about  $66^{\circ}$  from the perpendicular, whereas the round-headed shot fails to do so above about  $33^{\circ}$  from it, the loss we may suffer from our backwardness in introducing improvements is only too evident. The Germans, however, as usual, being more apt than ourselves in "appropriating new forces" (to use the expression of the Chief Constructor), have manufactured flat-fronted steel projectiles for their  $56\frac{1}{2}$ -ton gun. Even the Brazilians, with their little experience in naval warfare, are ahead of us in this. In the matter of gun-carriages, by dint of constant pressure, I succeeded, some few years since, in introducing improvements which met with the hearty approval of the Service; but these have never been fully completed. Without dwelling upon the sad end of the inventors of many of the improvements recently utilized for our naval armaments, viz., Norton, Lawrence, Chalmers, and Snider, I will refer only to the inventor of the Harvey torpedo (the very weapon for our sailors), and himself, the man of all others qualified to teach them to use it, who had to appeal to foreign countries to recoup the expenses he had been put to. With such an instance as this of our backwardness in using the mechanical skill of our people, we cannot feel surprised at the statements in the public prints, that inventive talent is languishing, to the great detriment of our national wealth.

When we turn from the weapons to those who are to direct and wield them, we find our preparations equally backward. This great country possesses rather less than 20,000 naval seamen; it has no

reserve, except old Pensioners, and no plan for supplying the large number of men that would be needed in a prolonged struggle. The so-called Naval Reserve force, expected to number 20,000 enrolled men this summer, could not be removed from the Mercantile Navy without destroying our trade; and the number of Coast-guard men who could be advantageously sent from their stations on shore, is much too small to supply the gaps in our trained men in time of peace, and would prove but a drop in the ocean in time of war.

The Royal Marine force has been reduced to the number which is sufficient only for ships in commission, and very recently it was proposed to abolish it altogether. Really the lessons of former wars appear to be wholly thrown away upon us! Here is a force to which we ought to look for keeping up the supply of trained gunners, with "sea-legs and sea-stomachs" (as Captain Wilson expresses it), a force of infinitely more importance to us than troops of the line, consisting, as it does, not only of soldiers but of skilled naval artificers, and we quietly contemplate supplying their places with raw recruits obtained at enormous cost in times of danger, and, when obtained, likely to require nurses to look after them, until the time of seasickness is got over. Marines, on the other hand, on being embarked, are at once at home, adding to the power and discipline of our ships while they remain on board, and ready at a moment's notice to land and show themselves, as they have ever done, enduring, reliable, and loyal soldiers, and hold tenaciously such of our dependencies or coaling stations, as it might be of vital importance to us to keep fast hold of during a European struggle. We have not, however, yet made as much out of them as can be made. In the commencement of our Peninsular war, the Duke was constantly thwarted by the want of trained artificers to carry on the operations of a siege, and the corps of Royal Engineers was created—a corps which has since been as eminently useful to us in peace as it proved itself able in war. Our future naval operations will require mechanical skill, and a readiness of expedient, to repair our gun-carriages and other weapons, such as can be obtained only from early training. On talking over this matter lately with Captain Wilson, he suggested the question: Why not create from our Marines a corps of Royal Naval Engineers? The idea appears to me well worthy of our earnest consideration. We have had, only recently, too many costly instances of the want of mechanical knowledge. To look to the Merchant Service to replace our valuable trained men is, I repeat, a serious mistake. To attempt to remove the so-called Royal Naval Reserve men, who are the backbone of the Merchant Navy, would entirely upset its discipline. We should have innumerable repetitions of such massacres as those which have recently startled us, and our commercial lines of traffic would be thrown into hopeless confusion. The maintenance of our foreign trade is a first necessity, and to touch its *personnel* would quickly bring about that which Admiral Porter points to in case of war with the United States—the destruction of our commerce.

The rising sailor boys, as I have repeatedly pointed out for several years past, instead of being trained in the use of machinery and in

that practical gunnery which they will hereafter be called upon to employ, are still drilled to run about with handspikes and tackles; and, by-and-bye, when past the age at which the eye and hand can be taught to act in unison, will be required to exhibit the thoughtful and steady precision needed for working guns by steam-power. This is not the way to ensure that each of our costly bullets shall reach its billet, and do its full work upon an enemy.

This leads me naturally to the next point of our mistaken policy. We are not only prepared to risk the destruction of our own commerce, but have voluntarily given up the power of destroying that of our enemies. "His Majesty," writes Lord Heytesbury, in 1802, "will never consent to place out of his hands, in a treaty of peace, "those means which may be necessary for the security of his dominions in time of war." We have since been fatuous enough to do so, and the possible consequences have been so clearly pointed out in Mr. Ross's able paper, to which I have already alluded, that I need say no more on this point.

Finally, no steps have yet been taken to unite and organize the large forces of which we could make available in time of war for the defence of our coasts. Thus, with a numerous sea-coast population, possessed of every attribute necessary for waging successful warfare against all comers, with maritime resources far superior to those of any other nation, we may, by some unfortunate combination of circumstances in these days of rapid movement by steam—when invasions, to quote Lord Mansfield, are always ready organized,—find the command of the seas about England in the hands of our enemies, and our country at their mercy.

At the present moment our first line of defence consists of a few small turret-ships and gun-boats, which would be unable to keep the sea in heavy weather. It will take months to fit out another sea-keeping ironclad squadron, and long before the fleet on which we pride ourselves could be brought from the Mediterranean, a combination of two or more hostile powers might send to our shores a fleet and an army which by a sudden and unexpected blow would do us incalculable damage.

And now for the remedies I would propose. I will commence with the last defect I commented upon—the absence of an organization of the *personnel* of our maritime resources. This is perhaps the most important point, and it is the one which should be first attended to. We have in our veteran coast-guard men the best possible nucleus for a defensive coast force. These men have been trained as gunners, have been long accustomed to judge distances at sea, and are familiar with the powers of their guns.

Next there are our yachtsmen, consisting of the pick of English sailors and fishermen, and numbering not far short of 5,000 men, who might all be trained with advantage to themselves as well as to the country to the use of guns and the working of gun-carriages of the newest type.

Then again we have at all our sea-ports, numbers of fishermen and boatmen, as intrepid and bold as heart could desire, who would by

trifling encouragement be made to swell this reserve force, and to find pleasure in learning to fire well.

The dockyard men, or some of them, could be trained to be stokers, so as to be available as a reserve of stokers in time of war; their places being supplied by naval pensioners, who should, as far as possible, be employed when extra hands are required at our dockyards and arsenals, so as to know this work when called upon to perform it.

Lastly, there is our large body of Volunteer artillery and infantry, who have already made themselves skilled marksmen, either with large guns or rifles, and whose natural aptitude for shooting might be kept up and increased by periodical competitions and drills under the direction of our Admiralty and Naval Commanders-in-Chief.

Wherever, therefore, landing-places exist on our coasts, and at all these, coast-guard stations are to be found, I would have stations to which the above-mentioned forces should be told off, and these stations should be provided with suitable guns, and be connected with London by telegraph, and with each other by good roads and railways, as well as by telegraph wires and other modes of signalling.

These forces should be practised as far as possible afloat as well as on shore; and both for purposes of drill and defence, gun-boats mounting plate-piercing guns should be stationed at all our sea-ports and off our principal landing-places.

The fast river steamers should, in time of war, supplement these gun-boats by acting as torpedo-craft, whilst our steam-tugs, acting as rocket-vessels, should be in readiness to ram and run down the enemy's transports and boats. If the whole of our available craft of these descriptions were told off to the stations nearest the places where they ply, they would easily, under the skilful commanders of these river vessels, and united under the flag of a dashing Commodore, throw a hostile force into confusion and render a landing impossible. The addition of a fire-ship, or an explosive vessel or two, would complete their work upon the fleet which brought over the forces intended for our destruction, and the result would be such as to leave us in security from a similar attempt for many years to come.

I have thus briefly indicated how England's defence can be insured by local means, and that the requisite forces could be provided from local sources without materially interfering with our manufacturing people, which is a point of the utmost importance to us; without drawing upon the seamen of our Mercantile Marine, which is of still more vital importance to us; and without detaining on our coasts the warships needed for their protection, and for destroying the fighting ships and ruining the commerce of the enemy.

I will now proceed to show how the last can be supplemented with other forces at our disposal, and enable our trade to be successfully carried on by our merchant navy.

The Mercantile Marine comprises numerous swift ocean-keeping passenger steamers,<sup>1</sup> which in war-time would doubtless become the carriers of a large part of the most valuable portions of our merchan-

<sup>1</sup> Efficient despatch vessels could always be selected from these.

dise, as well as of the munitions of war required at our more distant naval stations. Such vessels would, if war were now to break out, owing to the absence of organization, be dependent for safety on speed alone, and become a source of weakness rather than of strength to our fighting ships. What seems to me to be required is, to arm them with light guns, torpedoes, and Congreve or Hale rockets, and to enrol the men who will have to handle these weapons as part of the Royal Naval Reserve, and by appropriate rewards to induce them to take an interest in their drills, which should be taught them at the expense of the nation. Provision should be made by the arrangements at all our ports as already indicated for imparting the necessary instruction and for exciting interest in the work without interference with their ordinary duties, and the effect on their *morale* would be very great. Whilst waiting for another engagement, the better class of our seamen would hail any employment of this kind with satisfaction, and their feelings would influence others.

These drilled men should be divided, first, into two classes or more, the lower to be called gunners, and the higher class marksmen, both classes to be given suitable badges and also a small retainer in the shape of pay, and pensions when wounded in action. The badge would be a public recognition of their skill, and show them to be militant, and this honourable mark of England's appreciation would render them more patriotic and more eager to perfect themselves in the use of the weapons they would have to handle should war (as it undoubtedly will) come upon us.

Vessels manned in part by such men would soon become permeated by law-abiding principles, and being provided with proper arrangements at the Government expense, and with a subsidy to cover the increased insurance in war, would become a very cheap and efficient force, fully making up by speed and numbers for the lightness of their armament, and rendering the further addition of lightly gunned royal cruisers "needless."

Secondly, with regard to foreign seamen in our Mercantile Marine. The Danes, Swedes, and Norwegians are of the same stock as that whence we sprang, and have so nearly the same sympathies and interests as ourselves, that I believe we should do right in giving them all the privileges of English citizenship, so as to bring them into closer relationship with our own sailors, who would, I believe, benefit by their temperate habits as much as they are now deteriorated by companionship with the sailors from the mixed seafaring populations of the Mediterranean. Were this to be done, and the chance of prize-money or bonus superadded, I think the necessary supply of reliable merchant seamen could, if wished, be readily obtained from our natural allies.

The Mercantile Marine would by these means strengthen the Royal Navy, and could continue to do its work of providing supplies during war, for its *personnel* would be kept up to a thoroughly effective strength.

I have only to add that the merchant navy, thus organized and commanded by its own officers, duly trained for such work and

rewarded by honorary rank as lieutenants and captains, would when moving within certain pre-arranged parallels, be enabled to defend itself against privateers, and would likewise be enabled to act as a medium of communication or connecting link between our war cruizers, stationed to protect them against ironclads or heavy war vessels.

This protection against the enemy's war ships can only be secured by powerful cruizers; and, looking at the vast water frontier and the extended possessions which England has to protect, with a naval force of under 20,000 trained sailors, the question as to what class of vessel will be most useful, *i.e.*, good at all points, becomes very important. The strength of the metals of which she would be built is measured by their tenacity at the weakest part, and this simple rule is not inapplicable to so vital a matter as England's maritime defence. She cannot afford to run the risk of a serious wound to her commerce, even at her most distant possessions; and, therefore, every individual ship built for fighting should contain within herself every element of offence and defence. The size of this vessel must be greatly influenced by cost, for there is a necessity for the employment of a large number of such ships, for, as the *Times* informs us, and I think it wise to repeat the statement, "that the most powerful of ships could only be at one place at a time," and that, allow me to add, would be just the place a wary adversary would steer clear of.

As already stated, the immediate duty of fighting cruizers would be the protection of our commerce against the enemy's war ships, and therefore they would be spread out along the lines of traffic, keeping up communication one with the other by means of electric lights at night, fog horns of great power, and other pre-arranged signals; and gathering intelligence from the merchantmen passing them. It appears to me that these war ships could be coaled and provisioned at sea by means of suitable extemporised rafts, which their crews should be practised in putting together and in using for landing their men; and I think these cruizers or sea-watchers might be often anchored in mid-ocean. Very light telegraphic lines could perhaps, in many cases, be laid down, with buoys and flags to mark anchoring stations; a plan which, if as successful as similar devices in the Crimea were, would place England, the flag-ships of her Commanders-in-Chief at the principal foreign stations, and the sea-keepers in mid-ocean, in close communication. Should such an arrangement be found too difficult for achievement at the present time, a telegraph ship or two and a station on shore might be provided for the more important points.

Before concluding my paper, I desire again to urge the necessity which exists for the better organization and teaching of our crews, and for giving every facility, both to Officers and men, of acquainting themselves thoroughly with the handling of our newest weapons, under all the varied conditions of maritime warfare.

Our ships now abound in engines for destroying life, which require long and careful training to use with that steady coolness and precision which lead to victory.

Nelson, Cochrane, and others, like Alexander, Cæsar, and Napoleon,

were themselves masters of the art of war, and hence could inspire their followers with confidence; but what commander could inspire an untrained crew with the knowledge and skill needed to manage the machinery of a ship, and to work her 80-ton or other guns by steam machinery?

The devotion of German Officers and men to mastering their duties is now proverbial, but it is not so well known that the French Government has recently published plans of all foreign ironclads, for the instruction of its Naval Officers. May we soon follow the example thus set us, and stir up such of our Officers—as have the requisite mechanical knowledge and are able to impart it—to teach our Navy the relative values of the different guns and armour used by all maritime powers.

If the preparations which I have mentioned as essential to our maritime supremacy be postponed, owing to our self-gratulations at the immediate results of our recent unexpectedly vigorous policy, it is to be feared that our pre-eminent pluck and dash may not prevent our being landed in disaster, when opposed to the better disciplined skill of more painstaking nations.

If, however, the organization of our maritime forces be at once undertaken, and the strength and nerve of our seamen be utilized as they should be; and if full advantage be taken of our mechanical skill in improving our armaments; I, for one, should have no fear that we should lose that empire of the sea which we have so long and so gloriously maintained.

**The CHAIRMAN:** If any gentleman feels inclined to give us further information, we shall be very glad to hear him. I hope there will, by permission of the Council, be a further opportunity of hearing the second part of the subject from Captain Scott. I should like to remark that the question of laying down telegraphic lines in mid-ocean has been tried, but hitherto unsuccessfully. I have a recollection of a floating vessel, the "Brisk," being moored in the chops of the Channel for that purpose, and it was found rather an impracticable thing, not merely as a mercantile speculation, but also as to certain mechanical difficulties. I do not say these difficulties cannot be got over, but we should like a little more information with regard to the mechanical part before we can agree as to its feasibility. I did not quite understand how the extemporaneous rafts for coaling are to be used at sea, and I should like to know that from Captain Scott. Many years ago, the idea was advanced of utilising large merchant steamers for carrying naval artillery, that is to say, preparing them so as to put heavy guns into them if we should require their services in war. I rather think a certain number were thus fitted, but the plan came to nothing nationally, because it was found that the alterations requisite for converting them into vessels capable of carrying what were the heavy guns of that day (though their weight would be trifling as compared with the ordnance of the present day) were so great as to materially interfere with their passenger capabilities.

**The EARL OF DENBIGH:** I wish to ask Captain Scott if he has heard of a plan which I met with not long ago. A gentleman who has given a great deal of time and consideration to the defences of our country, told me that he had made drawings of a plan, which had much interested Sir William Wiseman, for utilising the merchant vessels, or rafts, or any floating craft which you might be able to lay hold of, at a few hours' notice in case of invasion. He would have a sort of built breast-work, shot proof, something on the circular principle, like the "Popoff," which should surround any such craft. A temporary deck might then be thrown across of sufficient power to bear the guns. He would also have a built dome that would work in sections over this, sufficient to turn ordinary shot. The advantage

was that he would be able to get a steady deck to fire from. I only heard of this in conversation, but when he told me he had submitted it to Sir William Wiseman, who thought highly of it, and that it might be worked out, I was anxious to take this opportunity of asking Captain Scott, or anybody else present, if they had heard anything about it.

Mr. SCOTT RUSSELL, F.R.S. : I feel it to be my duty as a shipbuilder to say that I feel highly gratified at Captain Scott having put to us a problem, which I am anxious sailors should put to us, as to whether we can do what they want. He says that he distinctly wants to have unsinkable ships. Now, I venture to answer him in one word that it only needs that sailors should wish to have unsinkable ships, and they can get them, not only without practical inconvenience in the use of them, but with great practical convenience in the use of them, and with great addition to the security of the ship, and the manageability of the ship and the gun batteries. I hope, therefore, that in the next paper he will give us, not only his views as to the extent to which he desires to have these unsinkable ships, but will also go further, and let us shipbuilders know what are each and all of the other qualities he desires, to make his war-ship fit for his sailor's purpose. May I just make one suggestion to him for the next paper? I should like him to say the degree to which he desires his ships to be handy and clever at backing, manoeuvring, stopping, and turning, because I can tell him that ships far more handy than those we have now in the Navy have been made already for other purposes, and might most easily be adapted to the Navy, if the sailors wished; but if they won't say what they want, how can they expect us to force them upon them? On one point I hope the author of this paper will dwell in his next paper, for I have been much delighted with his allusion to the subject. As I am not a sailor, I only speak to you from the engine-room; that is my department. Now, speaking to you from the engine-room, I venture to make a suggestion to the members of the profession, which my experience in the engine-room makes me think of great value. I think that all the Officers on board ship should, as much as possible, be trained to the knowledge of the others' business, in order that they may know how to co-operate. For example, I think a sailor should know as much as possible of the engines, of the engine-room, and of the boilers; for I think without that knowledge, the captain on the upper deck, steering his vessel, may make very great blunders. I have often myself steered vessels. It was my good luck as a boy to be trained to the sea before I was trained to the engine-room, and to get sea legs, and all that sort of thing, before I took to shipbuilding, and I have always been grateful for it. But I have seen from the Captain's signal-room most erroneous and most injurious signals sent down into the engine-room; signals that could not only not be fulfilled, but if they had been at the time, and in the succession, and in the way in which the Captain gave the orders, they would have destroyed the engine. And why was that? Because the Captain on the deck knew nothing whatever of the engine-room to which he was speaking, and he therefore gave orders which were contradictory, impossible, and most dangerous if attempted to be carried out. I would insist on all engineers being good, well-trained seamen, who would not be unwell, nor have bad sea-legs, nor anything of that kind when they went to sea; and I would insist on all commanding Officers knowing thoroughly everything that would be going on in the engine-room after they had given a certain order. Now I carry this a great deal further. I would like you to train sailors to be good stokers when they are wanted; I would like you to train sailors to do everything to help us in the engine-room when we are in a difficulty, and we are often in a difficulty; and I should wish in like manner that sailors should know everything about our pumps, and our pipes, and all the communications that run out from the engine-room, in order that when mischief happens, they should each of them know what to do to help us, instead of going and doing what hinders us. They should know how to keep water out of our engine-room, instead of going and sending the water into the engine-room, which they often do with the best possible intentions. I therefore have to entreat you, as gentlemen of your profession, to try and extend the education of all men who serve on board a ship to a knowledge of the work of others to a certain extent. I hope you will not think me impertinent if I say, for example, that I think there are occasions when a great gun or a gun-carriage has suffered a little from shot, when it may be useful

for you to call the engineers and fitters out of the engine-room to help to make good your gun-carriage, and to help to put it in order again. I think it would be well that you should before-hand take these men and drill them to know what a gun was, and what a gun-carriage was, and how to be able to come to your assistance when you want them. In short, Gentlemen, I have hitherto looked upon a British sailor as the most capable of mechanics, as the most admirable of labourers, and as the most capable of workers when I wanted one. When I wanted land-work cleverly done with a few hands, I have been in the habit of employing, not landsmen, but retired sailors to do my land-work, and I found them do it much more cleverly than landlubbers. Therefore, I entreat you to consider all the inmates of a ship as one great family of clever fellows, each with a speciality of his own, and try and drill them, and train them, and educate them, so that every one of them should be able to give help to the other when there is a difficulty.

Captain J. C. WILSON, R.N. : Being a sailor, I must answer what Mr. Scott Russell has said, because it might lead to a wrong interpretation of what our duties are. The duties of those in a man-of-war may be compared to those which have to be performed in a town of considerable size. Now, I would like to ask whether it is practicable or possible that every person in a small township could be able to do his neighbour's work? With all due deference to Mr. Scott Russell, a little knowledge is dangerous, and every man should stick to his own work. Let every sailor know his duties as a sailor, every stoker know his as a stoker, and let engineers do their duty, and I have no doubt the executive part of the Navy will not be found wanting. It is a piece of impertinence for me to question what such an authority says, but such are my views, rightly or wrongly. To fall back to the very instructive and interesting paper which the gallant lecturer has read, as he has been good enough to refer to me by name once or twice, I should like to answer a few of his remarks. In the first place, I will say the root, the kernel, of the whole question is, "The Declaration of Paris," as was so clearly shown in the lecture read on it in this theatre by that very talented young Officer, Mr. Ross. Without that lecture it would have been nonsense to have discussed the paper before us. I am speaking, of course, with reference to that part touching the question of the protection of trade. If "The Declaration of Paris" is allowed to remain as it is, it presents to us one phase of the question; if it is done away with, which the bulk of us hope it will be, it brings the question before us in a totally different light. With "The Declaration of Paris" in existence, the bulk of the trade of England must pass to neutral flags whenever war is declared. We should, therefore, not then require such a number of cruisers, nor such an extensive system as we should otherwise do. I do not say our trade would pass to neutral flags from want of proper protection, for no doubt they would be as well cared for as possible, but, as was shown in a letter in the *Standard* the other day, the war premiums on insurance must drive the bulk of our commerce to neutral flags. I will divide our commerce under two heads: the ships that are insured would pass to neutrals, and those uninsured, which will probably remain under our own flag so long as they receive tolerable protection. These latter vessels I will again divide into two classes. But before we proceed, let us for convenience suppose that "The Declaration of Paris" is done away with. We should then, I think, divide our trade into two classes, *viz.*, ships of 12 knots and upwards, and ships of less speed. The ships of 12 knots and upwards would probably rely on their heels, and be lightly armed, as suggested by the gallant lecturer, to defend themselves, and to fight their way if need be. They should be protected by cruisers, stationed, say, at 24 hours' intervals from each other on the principal lines, such as between England and America or the Brazils. We should, besides, require squadrons to protect our coaling depots and narrow channels, such as the chops of the Channel, the Gut of Gibraltar, the Straits of Magellan, the Straits of Malacca, Hong Kong, &c., &c. Then we come to convoying. Convoys, I should say, would include all our coal and grain-carrying vessels, our timber trade, and generally vessels of about 8 knots speed, carrying on the heavy trade of the country. These vessels would have to be convoyed by very strong squadrons, probably with an ironclad at the head of each, and a certain number of frigates and armed merchant ships, as auxiliaries.

To man all these ships would require a very large number of seamen. And now we come to another point, which I purpose touching on very lightly—the *personnel*

not only of the Navy but of the Merchant Service. We have had papers read in this theatre, and some of the most intelligent members of Parliament, shipowners and others, have spoken on this vital subject, and the conclusion come to is, that the Merchant Service is now in the most lamentable state, and that England does not possess more than 20,000 or 25,000 skilled British merchant seamen. That certainly is a very small number. We require 50,000 skilled seamen to carry on our trade, besides others who are not skilled, that is to say, ordinary seamen and boys, stewards, cooks, and all the numerous callings which now form a ship's crew. But we require 50,000 able-bodied, skilled seamen. Out of these we have little more than 20,000 who are English; the remainder are made up of foreigners, 15,000, Indians, 7,000, and about 5,000 negroes, and every year the number of English is getting smaller and smaller. When it comes to the tug of war, and we take the skilled seamen who belong to the Naval Reserve, from the Merchant Service, how are we to man our merchant ships? It is all very well to talk of our magnificent ships trusting to their heels, and, where compelled, fighting, but who is to fight them? You cannot do on board a ship without a certain percentage of sailors. Those who have been in an emergency know what a good seaman is. A good seaman is a good man anywhere, but a good sailor on board ship is better than any other man, however good he may be. You may possibly do with a smaller proportion of good seamen now than formerly, but you still require a certain proportion, and without that proportion you will never get on safely. Taking all the best men from the Merchant Service, we shall then only have enough men to man our war fleet, without the auxiliary vessels which we should have to call in from the Merchant Service. There is one point which Mr. Scott Russell did not touch on, though I hoped he would, and that is the fitting of merchant ships to carry guns in time of war. I heard from very good authority—an authority which I am not at liberty to name, though you would all respect it—that when building these large ships of 12 and 13 knots speed, if Government chose to subsidise them by paying 3 or 4 per cent. on the value of the hull, the shipbuilders are prepared to build them of such a scantling that they will be able to bear a good armament, a chase gun beside broadside guns, and thus be available in time of war to be turned into cruisers. The sum would not be very large, as the engines would not be included in the cost.

As to the organization and training of the Navy, that is a subject upon which I have already read a paper, and I think our men in the Navy are about as badly trained and as unfit for their work, taking them all round, as any first-class naval power would dare to have its seamen. The men themselves are fine fellows, physically fine, with some education and a considerable amount of discipline, as compared with olden times, but they are imperfectly instructed as fighting men, and very inferior as sailors. Whenever they reach a certain age, they desert if possible.<sup>1</sup> The average age of the men in the Navy now is very young; they are mere boys. I remember going with a French captain to see the ironclad ship "Ocean," and when we came away he said to me, "Why, Wilson, that ship is not *"manned* at all, she is only *boyed*." And sure enough she was; and I ask any gentleman here in connection with the Navy to go on board any of our ships and look at the seamen. Three-fourths are boys, or youngsters under 20 years of age. I say this is unsatisfactory, and every year it is getting so. We have no reserve to fall back upon, because the merchant seamen, however good they are as such, are unskilled in the use of arms, or so partially so that they are unworthy of being classed as a reserve of fighting men. They are also undisciplined, and what is more, their career in life is such as to make them more undisciplined than ordinary landsmen. Another point that the gallant lecturer spoke of was the number of non-

<sup>1</sup> It was stated by the First Lord in a recent debate that the desertions were so few, being only 4 per cent., as to show no discontent on the part of the seamen in the fleet; but he did not explain that but a very small proportion of the men are so placed that it is possible for them to desert, for, of course, they cannot do so in the Persian Gulf, China, South Seas, African station, or North Pole, and, in fact, only in England to a limited extent, Australia, California, and the south-east coast of America. But where they can escape they go, not in the proportion of 4 per cent., but more nearly in that of 20 per cent.—J. C. W.

combatants, only partially disciplined, if at all, and untrained to the use of any arm on board a man-of-war. This is a most serious matter, and I cannot understand how members of Parliament, knowing such a state of things to exist, can listen to people who say the Navy is as it should be. At this present time, when there is the prospect of a war in the East, there is a ship fitting out, the "Hotspur," at Plymouth, to join the Mediterranean squadron, with 57 per cent. of her crew non-combatants! Now, I ask soldiers, civilians, or anybody else, can any one believe that the Navy in such a state is satisfactory? The number of non-combatants varies from 30 per cent. in vessels of the "Sultan" class to 57 per cent. in the "Hotspur" class. With her crew of 200 odd men she will go out say to Salonica, with but 43 per cent. of men used to arms. If there is an outbreak, and she is required to land 50 men, a valuable ship will be left in the hands of those who are wholly untrained to the use of arms, and who do not know whether shot or powder goes in first? And, mark me, such is the case in time of peace, but what state would she be in in time of war? In war-time she will not have 43 per cent. of fighting men on board, because she will be filled up with a certain proportion of Naval Reserve men and others, trained only partially to arms. Now, I cannot for the life of me understand why all our crews should not be as well trained as fighting men, and disciplined as marine artillerymen; nor can I understand why our stokers, carpenters, cooks, stewards, all the present non-combatants on board a man-of-war, should not be as much fighting men, and as highly disciplined, as those of the Royal Engineers. The number of men we have in the Navy is, as far as I can see, ample, and the number of our reserves would be so too if they reached a proper standard of excellence, and had passed through a man-of-war. But they do not reach that standard, nor are they men-of-war's men in any sense of the word; they are inferior in training to men in foreign navies, and certainly in time of need we should find ourselves placed at great disadvantage. Material we have lots of, qualified men-of-war's men we have not in any numbers.

Lord RANELAGH: When answering the questions, will you have the goodness to gratify my curiosity, and give some information as to that curious-looking thing before us, which I understand from you is Hale's rocket, and has a very considerable penetration under water, and will you have the kindness to tell us what that penetration is?

Admiral SELWYN: I rise to give a very cordial and almost entire approval to Captain Scott's paper, read with his accustomed clearness and perspicacity. There are, perhaps, a few points in which I may strengthen his argument; but very few indeed in which I can say anything to contradict him. The question of the food supply which this country would have to face in the event of war is pressing more strongly than ever before, in consequence of the efforts of Captain Ead's to open up the Mississippi mouths. This, when effected, to Europe gives the command of the whole of the corn of western America by water carriage capable therefore of being transferred at a price one-third of that which is now paid for the transport of corn coming from that country.

It is perfectly clear that the longer war is continued, the less probability there is of any great food supply being found in this country. The more easily corn can be brought from America, the more we shall rely upon external supplies, and the more our farmers will devote themselves to the raising of meat-food instead of corn. The supply from the east might become precarious, because the commerce of the Mediterranean, which would enable us to rely on the production from the Danube, might at any time be interrupted. With regard to fast river boats, I presume for torpedo-work principally, to which Captain Scott has referred, I have just seen with the greatest pleasure in Mr. Thornicroft's yard, a torpedo boat at last made for the English Government. The Austrian Government had two of 18 knots an hour, and the French Government one. We are now having one built, but at the same time there is a statement in a morning paper that other firms are running boats of 24 miles an hour, and will engage to make a contract for 30 miles. With regard to the organization at each port, which I have always strongly supported as the best means of guarding our coasts, I disagree with Captain Scott just to this extent, that I think the present state of the Navy may lead us to expect enough active young Officers, thoroughly trained and disciplined, to do all the teaching required. These men would be fit to teach a considerable number of untrained levies, and it

would be vain to expect the Officers of the Mercantile Marine, however zealous, to have the modern knowledge and practical experience which could alone make them fit to train these men. I therefore think I might ask Captain Scott to reconsider his views on that point. As to the coastguard's men being relied on in war, I can only say if they have deserved their name, not being now much employed in protecting our shores from illicit commerce, their chief value would be as a nucleus of organization, round which all the coast levies might be accumulated in the case of war on the ocean, and of the abolition of that extraordinary Declaration, the wisdom of which has been so ably confuted in this theatre by Mr. Ross-of-Bladensburg. I quite see with Captain Wilson that we should have to divide our merchant ships into classes, of which some would necessarily be convoyed, and others would trust to their heels for safety. But what is the use of attempting to convoy when your carrying vessels carry ten days' coal, and your convoy only three? Can you expect to diminish your dangers by enlarging the time during which the danger lasts? Would it not be better to consider the manner of enlarging our fuel-supply by some recent inventions? We have done a great deal of late years by the introduction of high pressure into the Navy, but we are a very long way from having considered the importance of the economy of fuel, and that is the life of a warship to-day. Sea telegraphs were observed upon as being difficult, but they have only failed because a vessel which was fit to ride under sail or steam at sea was put to do the duty of a light ship. Mr. Scott Russell's observations were so ably combated by Captain Wilson that I have very little to say on the subject, except that I do not think that you can ask or expect men to be thoroughly trained in every pursuit. It is utterly out of the question. A thoroughly good stoker may not make a good man to go aloft. Even our marines, zealous as they are, object occasionally to go as high as the mainyard, and they are better trained than we could hope our stokers to be. But there is more than that. As long as I was serving actively, I never knew a case in which an appeal from the engine-room was not met with a ready response by the Officer of the watch; and, indeed, in many cases additional pay has been given to induce the men to do the stoking work. I should be very much astonished to hear that the knowledge of steam machinery has fallen off among our Officers since my day. I could myself go through an engine-room with any engineer, and should be sorry to know that with the increased facilities for instruction, our Officers are less acquainted with that subject than they were. But I do not think it advisable that the Captain should be boatswain, gunner, carpenter, and engineer. He must rely on that due subordination which has been the essence of our success, viz., every man knowing his own duty and doing it thoroughly, and then, whether it is the Captain doing the duty of the head, or the men doing the duty of the hands, the work will be thoroughly well done. Only one word more with regard to the possibility of arming merchant ships; I have passed over the Atlantic during the last few years, backwards and forwards, in the largest and best ocean steamers. There is no difficulty whatever in those ships carrying guns if you consent to let them carry them as they can. If you insist on broadside ports they cannot do it. If you give them centrally disposed guns with proper carriages, calculated not to strain their frames, they can carry them with very little preparation. It is a question of a comparatively small weight, and I am quite sure that a very little solicitation on the part of the Government, a very little attention paid to the question, a little patriotism appealed to, would induce provision to be made for such a purpose in the event of war breaking out. I do not think that the nation could fairly be called upon to pay an armed subsidy during peace, either for guns or for fighting. Our merchant ships in the old wars put their very highest pride in being able to beat off the enemy's men-of-war, and I do not think Britons have so degenerated that the Mercantile Marine would fail in this work in any future war.

**Mr. SCOTT RUSSELL:** One word in explanation. I did not mean that one man was to meddle with another man's trade. What I meant was, that each man should thoroughly master his own trade, and then know enough of the duties of every man about him to be able to give him thorough, cordial, intelligent help. More than that I should be very sorry to say.

**Mr. PAWNCE:** I think I have overcome those difficulties that have been spoken of

by my patent for unsinkable ships, patented in 1874, No. 1174. It consists of a double ship, and the inner ship is capable of supporting the outer ship if she is penetrated in any part whatever. My unsinkable ship is constructed in longitudinal as well as transverse sections, so that if a shot penetrated one section, and had not force enough to reach the inner ship, she would not sink. Had the "Vanguard" been built in that way, she would never have sunk. I have also a patent for armour, No. 4030.

Captain PRICE, R.N., M.P.: There is one topic which has not been touched upon here this afternoon, but it is one which I think any naval Officer, and I am sure both the gallant lecturer and yourself, Sir, will expect us to give some consideration to, namely, the question of the guns. Naturally when we are considering the strength of our Navy, and of the ships which compose it, we must go very considerably into the question of the armament of those ships. I won't say that Captain Scott has given us alarming information, because I do not think he has come here with any pessimist views, but amongst other incidental points to which he has called attention, he has made this remark: "It will be astonishing to my hearers "perhaps to be told that no 38-ton gun has yet been tested up to 100 rounds, nor "even to one-third of that in quick firing." I am sure that remark was not introduced without having the object of implying to a certain extent a doubt as to the power of these guns. He naturally meant, I take it, that if these guns had been tested to such an extent very likely they might not have been found capable of enduring that test. Well, as I have myself thrown doubts on this subject, I should like to say one or two words about it. From returns which have been presented to us of the different tests to which these guns have been subjected, I have found not only that no large gun of this kind, 35 tons or 38 tons, has been subjected to such a test as 100 rounds fired in such a way as they would naturally have to be in an action, but in the tests that they have been subjected to, I have found that no gun of such a weight has fired as many as sixty rounds without requiring repairs. I do not mean to say that the gun has shown signs of bursting, or that it has become entirely disabled, but the gun has been rendered *hors de combat* for the time being. It has been said that such repairs as were necessitated by this amount of firing might be performed on board ship. Well, no doubt if the implements and artificers were supplied, they might be under certain circumstances, but I confess I am very much inclined to doubt that they could be carried out in the face of an enemy, or whilst the operation of blockading an enemy's port was going on. I have taken the opinion of naval officers, gunnery officers, who are capable of giving an opinion on the subject, and they certainly tell me that such repairs could not be carried out. But whether they could or not there is this to be said, that the necessary implements have not been supplied to those ships which carry these large guns, so that on the principle that the strength of a chain must be tested by the strength of its weakest link, we may say that the strength of Her Majesty's ships "Devastation" or "Thunderer," apart from her ramming powers or the torpedoes which she may carry, must, among other things, be calculated by the strength of the vents in their guns. On one occasion, in another place, I was answered by a very high authority, one to whom the nation looks for an opinion upon points of this kind, that even admitting, for the sake of argument, that these large guns might not be capable of firing more than fifty or sixty rounds without being obliged to be sent home to England for repairs, really, as a matter of fact, that ought to be considered quite sufficient. The actual words, I think, were, "People might think it necessary that "the guns should be revented after every fifty rounds; but if they fired fifty "rounds in action, there would probably be very little left for them to fire at." I am rather inclined to doubt that. At all events I should like to see the thing tried. It is all very well for us to brag about our maritime forces; it always calls up a cheer; but I think we ought to look steadily into the facts of the case, and with that idea I have always advocated, and shall continue to advocate, a really practical test of our guns. I want to see these large guns of ours tested exactly under the same conditions as they would have in an action at sea. It is very difficult really to say how many rounds we might expect the "Devastation" to be obliged to fire in action at an enemy of similar build, and of course we must always pit our best ships against the best ships of the enemy. The only really practical test which we have

ever seen our large guns submitted to was one in the year 1870, when our three largest ships, the "Captain," the "Monarch," and the "Hercules," were sent out from Vigo Bay to fire at a large mark. I have the numbers here in a lecture given in this theatre by Captain Colomb, and I am taking the figures from his lecture. The ships were sent out to fire at a rock distant about 1,000 yards. I was in Vigo Bay at the time, and saw the experiments. The day was almost absolutely calm; at all events there was not the slightest motion I think on board any of the ships. The rock was 600 feet long and 60 feet high; that is to say, twice as long, and four times as high as a ship. That is the chief point to which I would call the attention of naval gunners,—that the rock was four times as high as a ship, because that is where the accuracy of firing at sea is more particularly required. The "Hercules" fired seventeen shots, of which ten hit; she was armed with 18-ton guns. The "Captain," armed with 25-ton guns, fired eleven shots, and made four hits. The "Monarch," also armed with 25-ton guns, fired twelve shots, and made nine hits. I won't follow out the argument which Captain Colomb so ably brought before us, but I will just go to the results that he gives. By a simple argument he reduces those results to the results that would naturally be obtained had the vessels been firing at a target representing the side of a ship, and, putting it into an interrogative form, he asks, "Is it really then the case that at a moderate range of 1,000 yards under the most favourable circumstances a 'Monarch' can only expect to hit a sister vessel from twice to fifteen times out of every 100 shots?" that is to say, from one to seven and a half times out of the fifty shots that we are told would be quite sufficient to smash all our enemies. He also says, "In six minutes from the opening of her fire on the sister ship at 1,000 yards, she will have fired 12 shot." There is another thing that we have to consider besides the accuracy of our guns. I have no wish of course to detract from the capabilities of our seamen gunners; the fault does not lie with them: it lies partly with our artillery, and partly with the elements which we have not as yet been able to overcome. We have this to look at, that as the size of our gun increases, so we must expect the accuracy of the gun to decrease. If the "Monarch," carrying 25-ton guns, can only make this amount of accuracy in firing, we must of course expect our 38-ton gun and our 81-ton gun to be even less accurate in firing at sea. Then comes the point, supposing that this single shot, or these half-dozen shots, if you please, out of the fifty fired before the vent becomes disabled, strike, we have to consider where they would strike, and what damage would be done to the ship that was struck. To say that those half-dozen shots would be quite sufficient to sink our enemy, I think is going a very long way towards saying that all the ships that we have been building hitherto are really so much money thrown away. We have been endeavouring to build our ships, if not absolutely unsinkable, at all events in watertight compartments, and with appliances and means for keeping them afloat. Mr. Scott Russell has told us, that if we only say we want it, he will build vessels for us actually unsinkable, and I believe that is perfectly within his powers; unsinkable I take it, he means, not only from the shot of an enemy, but from the blow of a torpedo or the ram of a vessel of similar size. Therefore, I am at a loss to conceive how we are to satisfy ourselves that we shall be able to do the necessary amount of damage to the enemy with the half-a-dozen shots with our big guns before they are disabled. I do not wish to take any alarmist view of this matter, but so far as I can see, I am really within the mark when I say, that after a very small number of rounds from one of our big guns, the possibility is that the gun may become for the time disabled; and that for the time is everything, because if we have to send our "Devastations" home from Sebastopol, or whatever other fortress they may be next employed against, to this country, or to Malta, or some other arsenal, to replace their guns, or even to revent them, which amounts to the same thing, I think we shall be in a very awkward position indeed. I have made these few remarks, because I think this question of the guns has been put very prominently before us, and is not by any means the least important feature of the lecture.

Mr. ROEBUCK, M.P.: I came here entirely ignorant of anything you (Captain Scott) were going to say. I came for the purpose of instruction, and I must say, I have been instructed to this extent, that I have been much alarmed. The gallant gentleman has proved to me by his lecture, as far as in a short time could

be proved, that we are in an utterly indefensible position, and one thing of all others which has struck me most, has been that the Navy which we have now, is not fully nor properly manned, and that it cannot be manned. Now what I should wish to learn in a succeeding lecture from the gallant gentleman is this. He points out certain defects in our Navy arising from want of men. Now has he any means to propose by which men could be obtained, because Government ought to be instructed by professional men upon professional subjects, and sailors, conversant with these matters, as the gallant gentleman is, are just those to whom we should look for instruction? Now I, as a legislator, should be very glad to learn what he would propose as to the means of manning our Navy, and rendering our men efficient for the purposes for which men are selected to be sailors; and teaching them what ought to be taught to each particular class of men, and how that particular class of men ought to be raised. If he would take that into consideration in his next lecture, and tell us what we ought to do for the purpose of manning the English Navy, I should be very much obliged to him.

Captain WILSON: I have read two papers on the subject in this theatre, which, if you will allow me the honour, I shall be very glad to send you; they will answer the question you have been good enough to raise. I know that it is out of order, but I omitted to touch on one point of the lecture which I hope I may be allowed to refer to now. I wish to say that I think Captain Scott did not give sufficient credit to the usefulness of young marines, and places too much importance on the old marines. Young marines are as good for fighting purposes as older men, in my humble opinion. In the old wars it must be remembered we had often soldiers on board our ships, who proved quite as good in every way as our marines. Sir William Napier states in his "Life," that he was embarked for some years on board the "Bellerophon" with his men as marines, and at the battle of St. Vincent, Lord Nelson, when Commodore in command of the "Captain," was helped on board the "San Joseph" by one of the soldiers of the 68th Regiment, who was one of the boarders. In those olden times, if we read naval history, we find soldiers spoken of in as high terms as the marines of the present day.

The CHAIRMAN: With regard to what has been said about the Officers knowing the duties of all the men on board, the idea always has been in our service that the Captain and superior Officers, although they may not be personally practised in the particular duties of the engineers and of the stokers below, would be worth nothing in their positions, if they did not know all about the duties of those over whom they have the charge. A Captain, I conceive, is no serviceable Captain in a ship if he is not himself personally able to judge of the duties of every man under his command, be those duties what they may. I may give one instance in support of the necessity in superior Officers of a practical knowledge of certain details. We may all recollect the Niger Expedition, which was an expedition up those rivers in Africa in a very bad, unhealthy climate. The loss of life from illness was very great indeed; so much so in the case of the engineers of one, if not of both of the steamships, that in order to get the vessels down the rivers, the surgeons (from the want of engineers) had to start and work the engines, in order to get the steamers out to sea.

Captain SCOTT: Commencing at the remarks made by Captain Wilson, I beg to say that I have not gone into the question of the relative values of young and old marines, because I have only dealt with general principles; but I shall be glad to go more into details on another occasion. Next time, and in continuation of the paper I have just read, I hope to put before you our war-ships, their needs, and the means of supplying them: I am quite sure that if we could stir up a little national enthusiasm, we should have a different feeling at our seaports from what now exists. We have already most valuable *nuclei* in Sailors' Homes for bringing together our seamen and coast volunteers. These Homes, which many now present have helped to establish, have been the means by which the *morale* of our men has been much improved, and their sobriety greatly encouraged; if we were to extend the use of those places, and to draw men together, giving them occasional papers and suitable readings, I think we might in a very short time provide our naval and mercantile seamen and our coast population with a strong patriotic feeling. Unless we, as a nation, are all firmly united with our seafaring coast population, we

should do little in war. Look at the Army, how very united it is on every essential point. We are proud of our Army, and one always finds that Army men are the very first to forward the best interests of the Navy; really, without such aid we should be nowhere. As to our defences, Captain Wilson has told us that when soldiers, in times past, have been embarked in our war-ships they have made very useful men, but the duties of sailors now are very unlike what they were then. Formerly the work greatly depended upon muscular strength; now it depends more upon skill, and therefore we must have well instructed men. We must not run the hazard of having to fight our battles with undrilled men. Remember, in the American War, how our vessels were sent off with untrained men, and were captured by the Americans. When and how was the tide turned? When the "Shannon," commanded by Captain P. Broke, and manned with a disciplined crew, who thoroughly understood their work, and would have followed their Captain anywhere, appeared off the Chesapeake River, then the "Shannon" took the frigate "Chesapeake" in a very short time. Happily, that war ended, as we all know, by our American cousins gaining their independence, and well it is for the freedom of the world that it was so. I only allude to this to show the mistakes we have made through want of preparation for war. I think that the Honourable Member of Parliament, who asked for information, will find in Captain Wilson's and Mr. Brassey's pamphlets, and in the discussion on Captain Noel's and other papers in this theatre, all the information he requires; but, with reference to his further remarks, I am going to show the insufficiency of our naval armaments, and how these armaments can be greatly improved, and I also hope to indicate the qualities required in our future fighting ships. At the present time we hear much about the need for building light, unarmoured vessels; but of what use will they be to oppose heavy war-ships, for our enemies will send their heavy war-ships to attack our commerce? Not long since, some of the most influential Frenchmen, speaking of what they would do in case of war with England, said that (despite the Declaration of Paris) they would leave our war-ships alone, and send their war-ships to destroy our commerce. I now beg to turn to Lord Denbigh's question, as to arming our merchant vessels. I think it of importance that we should utilise all the resources we have, but we should not attempt to put in the merchant vessels, guns which are so large that they cannot be carried without considerable alterations. I believe officers were sent round to ascertain whether our merchant steamers could carry heavy ordnance, but I do not think they were instructed to find out what extent of light armament such vessels could easily carry, and consequently they came back with the report that the vessels were unsuitable for carrying guns. As to making the necessary preparations for utilising our Mercantile Navy in time of war, there are very few men who have the technical knowledge of gun-mounting, and of the other appliances for warfare, to be able to grasp the subject,—to do so, and to efficiently carry out such preparations, you must have specially qualified persons. As respects the proposal to build circular superstructures, for the purpose of protecting heavy guns, I fear they would prove cumbersome, and would not keep out shot, because if the shot struck at even a very small angle, they would go right through. As to the question of unsinkability, there is no doubt but that it could be secured by means of cellular subdivision; and as to the value of the fish torpedo, the Austrians, who were the first to buy it, now consider that the ram is a far more efficient weapon. This seems the opinion of their Naval Constructor and their Minister of War, and I mention it by way of throwing light upon what we and other nations are doing. Lord Ranelagh asked about this sub-marine rocket. At the time that Mr. Hale brought it forward, the explosive effects of gun-cotton were unknown; but now we have every day fresh improvements in the manufacture of gun-cotton. The advantage of the Hale rocket is that whereas the fish torpedo requires careful launching, and the charge is exploded on impact about four feet away from the vessel struck by it, you may in Hale's rocket put gun-cotton or the strongest explosives in its front. (Lord RANELAGH: What distance would it go?) That depends on the size and weight. [The rocket was here let down its tube, and struck a shelf piece some feet off with great force.]

Captain BURGESS: You light the fuze in the rocket at first merely to start it.

Captain SCOTT: So you do in the case of the fish torpedo, and a very delicate operation it is.

With respect to the guns, Captain Price is perfectly right as to their insufficient endurance, and we have been continuously making alterations in them for some time past, and were an inquiry to take place, I am quite sure it would greatly benefit England by leading to the improvement of her war material. I have heard it said that the Committee of the House of Commons that sat on the guns have not done any good. We were, however, going on in a wrong groove, but, owing to that Committee, there was a complete change, and what progress we have made, is owing to their inquiries. The Committee that sat on the construction of ships have also done great good. Such inquiries awaken deeper interest in naval matters, and by bringing to light errors, enable us to go on in a sounder groove. Captain Price has done a great deal of good by bringing naval questions before the House, and not being a gunmaker, or having any personal interest in the matters he is endeavouring to push forward, his opinions are entitled to and do receive much respect. I venture to add that when I was employed by the Admiralty it was a pleasure to see the trouble that he took in instructing the guns' crews to use their new weapons. It has been asked elsewhere, Where are you to get thoroughly instructed Officers from? I do not think there are sufficient inducements to cause them to devote their time to professional work. If their time were thus spent, it would be much better for the interests of the Service. Our present system is to teach a few only of our Officers in the "Excellent," and the men are drilled to use the weapons in her; but they may have a weapon given them that they have not seen before. In times past, I have known loss of life to occur owing to being new to their weapons, and consequently uninstructed in their use. In one case a man took off the break, not knowing that it was intended to control the gun in a seaway. At night quarters another man was actually attempting to run the gun out while the Captain fired it. Were greater inducements held out, I feel sure a sufficient number of Officers would soon get the requisite instruction, and would come forward to teach all the men, including reserves and volunteers, thoroughly. I do not think that seamen, who are necessarily imperfectly educated, can ever teach modern gunnery properly. The work of gunnery teaching, combined with that of First Lieutenant, would give an Officer confidence when commanding his crew in action. To prepare for this he should always drill the crew at quarters, and not allow another voice to be heard, unless he gave a special order for some separate work. Every manoeuvre should be performed under his direction alone; to do this well requires a Captain who knows precisely what the power of his guns and other weapons is, and what his vessel really can do under steam. To command and fight a vessel efficiently in these times requires a special and very high class of practical education; and we can only hope that our Officers and seamen will hereafter be as much distinguished by their superior skill as they have been in times past for their dash and seamanship.

The CHAIRMAN: I think we need not wait till his next lecture to thank Captain Scott for the very instructive paper he has given us. He has given us something to think about. Some of us may think that everything is not quite so black as has been represented, and may not despair of the present; but, at all events, nothing can be better for us than to know the very worst that can be thought of us so that we may think the remedies out, and be perfectly well aware of our difficulties, and thus learn the best means of overcoming them.

## LECTURE.

Friday, 30th June, 1876.

ADMIRAL SIR HENRY J. CODRINGTON, K.C.B., in the Chair.

"THE MARITIME DEFENCE OF ENGLAND, INCLUDING  
OFFENSIVE AND DEFENSIVE WARFARE."

PART II.—OUR SHIPS OF WAR, THEIR ARMAMENT, &amp;c., &amp;c.

By Captain R. A. E. SCOTT, R.N.

## INTRODUCTION.

ON commencing this second part of my paper, I wish to disclaim everything of a personal nature, and though I have in some instances particularized, it has been, and will be, should I again have occasion to do so, with the object of bringing before you more clearly the defects of a system which has acted injuriously upon the *matériel* as well as upon the *personnel* of our Naval and of our Mercantile Marine.

The state of the *personnel* has been so clearly brought before you by the valuable papers of Mr. Brassey, Captain Wilson, and others, following the lucid statements of General Collinson as to our unpreparedness, that I need only call attention to the fact, that while we have been slumbering, France has been nursing her marine, which contains nearly 70,000 well-disciplined seamen between the ages of twenty and forty, who either have passed or are passing through from three to five years' service in her war-ships. This force is double that of all our seamen and marines put together.

In Officers, France is equally well provided, having 5,000 captains of merchant vessels, who also have passed, or are passing, from three to five years' service in her Navy, and are therefore thoroughly efficient commanders, ready whenever their services are required by their country.

Our own reserve force comprises but few Officers, and those few insufficiently instructed in the art of war. Even the "Rainbow," commanded by Thomas Brassey, Esq., M.P., is indifferently armed, but is well supplied, however, with handspikes and tackles, with which guns cannot be accurately pointed, nor the crew trained to use the newer weapons.

I believe however, from the attention the nation is now bestowing upon maritime matters, a better day is dawning, and that our national armaments will soon be placed upon so sound a basis that the question asked in the very able leading article of the *Pall Mall Gazette* of the 11th February, 1871, viz., "What guarantee have we that under similar circumstances we should not fail in a way similar to that of France?" may be satisfactorily answered.

My own desire is to direct attention to what is *capable of improvement*; and as I feel sure that foreigners are well aware of our shortcomings, which are perhaps unknown to those who would gladly inaugurate a healthier state of things, I do not hesitate to mention what I think to be faulty, pointing out at the same time how it may be amended.

Permit me here to say a word on a point which is connected with the subject I am treating of, and which is of some importance to us, viz., the facilities given to foreigners to view our yards. This is desirable, otherwise England cannot continue to be the mart of the world; but while doing this, let at least equal facilities be given to our own Officers, and then I should have no doubt as to the result. We must remember also that our great engineering firms, who contribute so largely to the country's greatness and wealth, manufacture for peaceable as well as for warlike purposes, and that in case of war, we have the willing aid of these powerful companies. Besides, we have the advantage—a very great one if intelligently used—of knowing through them what progress other countries are making.

I now pass to the consideration of our naval power, its present improvement and its future development:—

1st. As regards new ships; and

2ndly. As regards the improvement of our present ships.

#### *New Ships.*

The smaller vessels should be sufficiently numerous for the varied duties which our wide extent of territory necessitates, viz., for putting down piracy and the slave trade, and for the protection of British subjects in all parts of the globe; such vessels, if not found sufficiently numerous in war time, might, as Mr. Brassey recently pointed out in this theatre, be easily supplemented by hired vessels. Hence we may safely devote all our energies to the improvement and completion of ships now building, and to the bringing up our present armaments to the requirements of modern warfare.

Our fighting cruisers—ships equally well adapted for single combat or for combined action in line-of-battle, and able to maintain the honour of the British flag at all times and upon all occasions—should consist, I think, of two classes: the smaller of between 5,000 and 6,000 tons displacement, and the larger of from 7,000 to 8,000 tons, or about the tonnage of the new cruisers "Nelson" and "Northampton," which vessels differ from both the classes I propose, in not being designed to fight with ironclad ships.

These two classes of ironclads, being largely built of steel, a metal which has recently been so greatly improved in strength and tenacity, would be of moderate draught of water and manageable size, would be fast, and take a powerful armament into action. Their cost in proportion to armament would be small, and, as the most efficient ship is the one which combines in the best proportions the needful qualities for warfare, I have thought it best to place my views—the result of careful comparison and long experience as to the relative importance of these qualities—before you, viz:—

- 1st. Unsinkability.
- 2nd. Ramming power.
- 3rd. Gun and torpedo power.
- 4th. Armour protection.
- 5th. Speed.
- 6th. Coal capacity or steaming power.

"Sea-keeping" I have not named, as all England's war-ships should be able to keep the seas in all weathers; coast defence ironclads seem to me to be an anomaly.

#### *1stly. Unsinkability.*

This should be the chief consideration of the Constructor; and I feel sure that my brother Officers go with me in thinking, that half or more of the modern thickness of armour on the *topsides* should be given up, and the larger portion of the weight of iron saved, be employed to strengthen the bottom of the ship, and to render her cellular subdivision more complete. The Navy will, I think, be glad to hear that Admiral Elliot's advocacy of the turbine has borne fruit; for even should the results of the experiments not lead to its introduction as a principal motor, they *may* call attention to the great importance of *rapidity of turning* (especially when an enemy may be charging), and thus lead to the engine for weighing the anchor being also utilized for the purpose of turning the ship.

In case of damage to the *rudder* by torpedoes or torpedo-boats, some appliance to take its place is needed for the safety of the ship against rams, &c., and a powerful means of clearing the vessel of water, is equally needed to secure the ship from sinking. The views which Mr. Griffiths has put forth of the capability of his *cased* screws for very rapidly discharging the water received through a leak (caused by the blow of a ram or otherwise), as well as other similarly promising plans, should be at once and very fully inquired into. The difficulties of preventing serious damage by torpedoes have been much over-estimated. In the experiments carried out at Portsmouth, the weak superstructure and bottom of the "Oberon" received, on every occasion but the last, less injury than was anticipated; and I think these experiments tend to show that a more *subdivided* and a *stronger* bottom would have precluded serious damage by ordinary torpedo-attacks. Further strength and resistance would be obtained by making every store-room and tank a water-tight compartment, and the increase of structural strength thus gained would materially add to a vessel's security against the blow

of a hostile ram. Looking at the long period the "Vanguard" was kept afloat after her thin side had been ripped by the "Iron Duke's" spur, the conclusion that *unsinkability* may be secured, seems fully justified.

Strength of bottom, would likewise prove a safeguard against serious damage from grounding, when perhaps pursuing (not flying from) an enemy's war-ship right under her own batteries. One of our ships, with a strong wooden bottom, went over a ledge of rocks in pursuit, and was safely bumped back again over it. Strength of bottom would also prevent the injury that might otherwise accrue from plunging fire, or from projectiles, or portions of them, striking a bulkhead, and being deflected downwards against the bottom.

#### *2ndly. The Ram.*

This has been aptly termed "the naval bayonet," and is a weapon which, if handled with skill and pluck, will prove invincible. Its special fitness for British sailors was referred to in my last lecture, and the Chief of the Naval Constructive Department of the nation which used it with such effect off Lissa, says of this weapon, when speaking in regard to the re-construction of three vessels of the Austrian Navy at the cost of one ironclad—that we, as the result of this cheap conversion, "now possess three rams, the most dangerous and secure "weapons, I consider, and compared with which, the action and "effect of the aggressive torpedo is, in my opinion, doubtful and "insecure, and may easily endanger the ships of its own fleet."

Such then is Herr Romako's opinion of the relative values of the ram, and of the fish-torpedo which the Austrians were the first to purchase and experiment with.

#### *3rdly. The Torpedo and Gun.*

1. The fish-torpedo requires careful manipulation, and the dangerously high force which is essential to compress the air for working its motive power, has very recently resulted in one or perhaps two deaths of the skilled instructors teaching its manipulation on board the "Vesuvius"; the compressed air burst a torpedo in the Royal Arsenal, and occasioned a serious accident, and is, I fear, likely to cause still more serious results when handled by the less practised crews of the Royal Navy. This torpedo explodes by detonation, the bulk of the charge being at perhaps 4 feet distance from the object struck, hence the greater portion of the effect is expended in throwing up a column of water instead of cutting through the object aimed at. Until therefore the delicacy of this weapon, and the dangers and drawbacks attendant upon handling it, be removed, I cannot but concur with the opinion of Herr Romako as to its inferior value as compared with the "Ram."

The Harvey *towing torpedo* is simple and efficient, and far more easily and safely handled; it is exploded in actual contact with the object, the centre of the charge being within half the distance of that

at which the fish-torpedo explodes. Its range, however, is more limited.

I believe the fast steel torpedo-boat is destined to play an important part in future naval warfare, by dashing out from under the shelter of its protector and destroying the rudder, screws, &c., of the enemy; I think that a more simple machine than the fish-torpedo would be offered to our Government, if the *certainty* of a fair reward were to be held out.

*The Gun.*

In the early days of armour-plating, Colonel Inglis, R.E., conclusively established that one 68-pounder smooth-bore did as much damage as five 32-pounders, and I think that nearly similar results are obtainable from rifled guns; for instance, one 18-ton gun will produce an effect beyond that which can be obtained by the firing from three 12-ton guns.

The power of the 18-ton gun is sufficient for the penetration of the armour of any ironclad afloat within certain limits of range, but the 12-ton gun will *not* penetrate the armour of thickly plated vessels. Its shell also is weaker.

The superior value of a powerful gun which *will not fail* to damage the adversary against whom it is discharged, is obvious, and even those in favour of light guns, arrange for such guns being fired together by means of electricity, so as to endeavour, I suppose, to attain the same result as that which could be obtained with *certainty* by the more powerful weapon: this leads me to the important point of a high velocity as an essential for striking a hard blow. The blow struck by any projectile is proportional to its velocity squared, multiplied into its weight, and, consequently, if one gun discharged its missile with a velocity of 1,000 feet per second, and another gun a projectile of similar weight with a velocity of 2,000 feet per second, the blow given by the latter would be four times the force of that given by the former gun; hence we may deduce how the higher velocity of the German breech-loading 56½-ton gun enabled it to give a greater result than that which had been obtained from our 81-ton gun, notwithstanding the excellent construction of the latter.

This higher result seems to be due to the enlarged powder-chamber, and I believe that it is now contemplated to chamber our 81-ton gun to 18 inches, and to make the bore 16 inches diameter. Were the 18-ton gun to be somewhat similarly treated, namely, chambered to 12 or 13 inches, and its bore kept to its present size of 10 inches, its power would, I believe, be nearly doubled, and a like result would attend the chambering of the 35-, the 12-ton, and the smaller guns.

"Armed science," however, as represented by the artillery, who seem far more apt than the Navy in the appropriation of new forces, has already had a field-piece designed to attain the same advantage in velocity, as that given by the German breech-loaders. But for the Navy, in which it is doubly important to strike hard, little appears to have been done.

This leads me to the projectile. The present war weapon, or tool

with which our sailors will have to crack the side of an enemy, is made of cast-iron, and this brittle metal is pierced somewhat after the pattern of a sheet of postage stamps, in order to receive the studs, by which rotation is given and the projectile kept point foremost.

These studs are swedged in by powerful hydraulic pressure, and hence necessarily act as wedges to split open the projectile on impact.

The reason given for the introduction of the gaining twist was to reduce the strain on the gun on the shots starting, but the adoption of a slower-burning powder has now caused the greatest strain to be thrown upon the gun when the shot is nearer its muzzle, and thus has reversed the conditions, which caused the gaining twist to be adopted.

There is now *no advantage*, but the contrary, in continuing to rifle guns with the increasing spiral or gaining twist which necessitates studs, in fact, the supposed advantage was always infinitesimal.

Plate XIII, fig 4, S. a. A, represents the course taken by the stud projectile on first starting, through the bore of the gun rifled with the *increasing spiral*; the curved line shows the actual path of the iron-ribbed projectile in rising and centring itself easily in the bore of the gun, rifled with the *uniform* spiral, fig. 6, S. b. B.

The difference in strength of the service stud-projectiles between those of iron only is best shown in figs. 1 and 2 (O. S. C. Report).

The unfortunate result of the adoption of the gaining twist in causing loss of velocity, and consequently of penetrative power, is apparent from the accompanying table compiled from official reports. This loss of projectile energy, all the skill of Shoeburyness and the factories has been unable to restore. (See table A in Appendix.)

#### *The Metal of the Service Projectiles.*

As the Germans and the Brazilians are manufacturing steel projectiles for war-purposes, retaining cast-iron for ordinary practice in peace, I can scarcely imagine the cost of such superior weapons to be an insuperable bar to their introduction into the English Navy.

The poorest workman deems it the cheapest plan to provide himself with the best tools, and therefore buys those with a steel-cutting edge, for he finds he can perform much more work and with less toil, than if he were to use the poor cutting edge of cast-iron.

The projectile itself is merely a punching tool driven at a very high speed, and to manufacture it of a brittle material, is not the way to enable our sailors to retain their superiority in warfare. The toughness and strength which are found in steel, are needed to enable the shell to punch an enemy's armour and then to burst explosively, after penetration.

The charge placed inside plate-piercing shells is *exploded* by the heat evolved by impact. This effect can be delayed by wrapping the charge in flannel. *Cast-iron* shells usually crack on oblique impact.

Judging from the results of firing with our guns, I believe that if we were to avail-ourselves of the fortuitous change brought about by the adoption of a slow burning powder, which has left our naval guns, from 35 tons downwards, with a very large excess of strength in the inner tube and in the thickness of breech, and we were, as already

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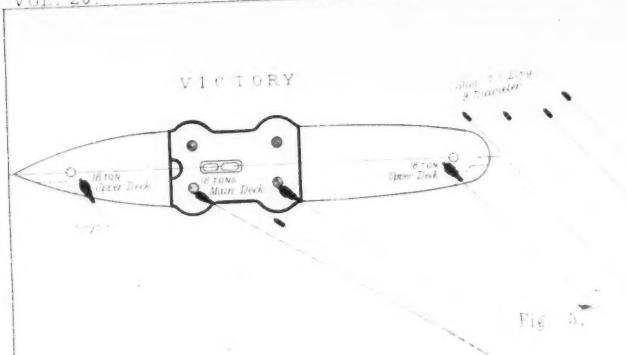


Fig. 5.

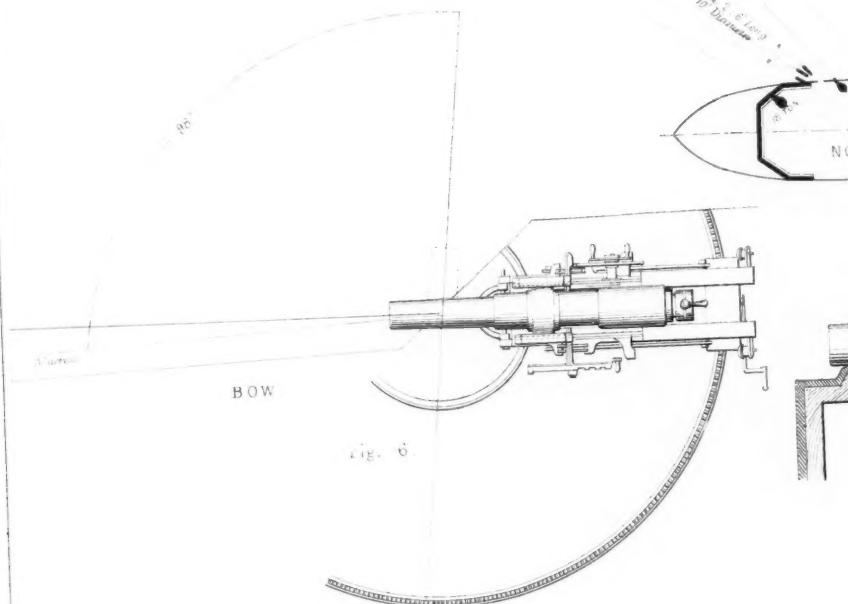


Fig. 6.

12 PR. B.L.R.

SUOTT SHELL  
FOR 7 M.L.GUN  
Body as cast.

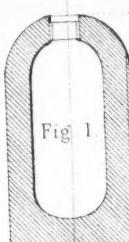


Fig. 1.

SHELL FOR FRENCH  
7 M.L.GUN.  
Skin turned off

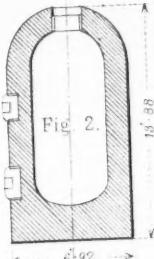


Fig. 2.

COMMON SHELL  
FOR 7 SHANT M.L.GUN

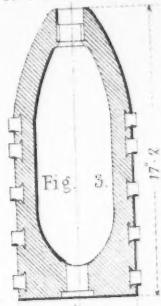
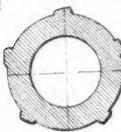
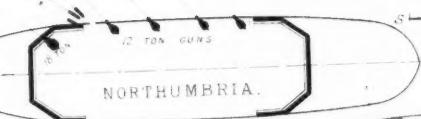
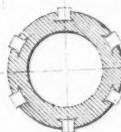


Fig. 3.

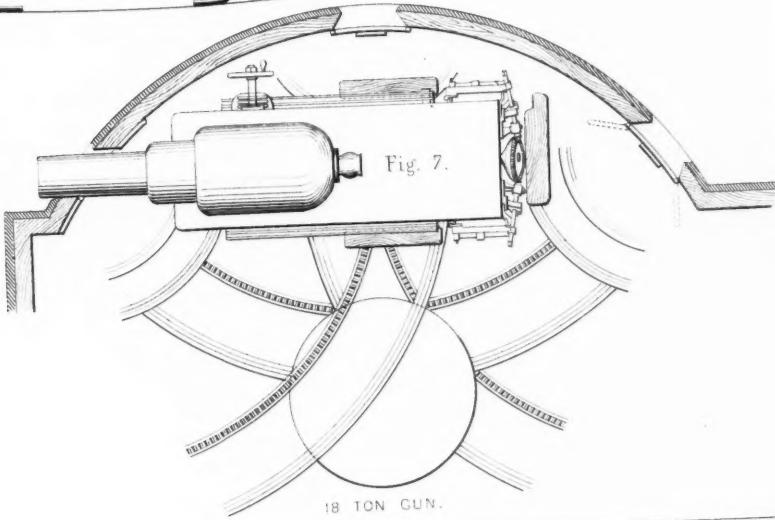


Scale by Weight filled 100 lbs.

Fig. 4. Centering of shot



NORTHUMERIA.



J. Jobbins



indicated, to increase the size of the powder-chamber and its charge as far as practicable—the power of our naval guns would be so greatly increased, as to enable them to drive projectiles against armour-plates with *nearly double* their present force.

One of the most scientific of our artillerists has estimated that the studs of projectiles fired from our 25-ton guns have commonly to bear a strain of no less than 20 tons to the square inch, so that the fact of the studs being over-weighted and the studs themselves overstrained, admits of little doubt, even were the evidence of the fact not legibly written upon the studs and stud-holes, and proved by the compression of recovered projectiles, and the dropping of their studs on discharge.

The heavy copper wad, recently applied to prevent erosion or scoring of the bore of the gun, would be unnecessary with a better system of rifling: this wad must greatly tend to break up the projectile which, considering the brittleness of the metal of which it is manufactured, is a marvel of strength.

The recent firing of fifty rounds, at Shoeburyness, in one day, and then re-venting the gun, is set down as a great success; but as various delays occurred during the series of rounds fired, causing a mean interval of  $4\frac{1}{2}$  minutes between them, and a wet sponge was employed, excessive heating of the gun was prevented.

I think the result rather tended to show the advantage of the naval pattern of gun-carriages, and the quickness and accuracy of pointing with the simple rack-training gear; though it likewise showed the danger of being dependent upon hydraulic gear alone, for both the hydraulic for lifting the carriage upon its rollers, and that for checking and controlling the recoil of the gun, were damaged, requiring in the one case  $12\frac{1}{2}$  minutes, and in the other, 63 minutes to replace them in working order.

In the "Hotspur's" 25-ton, and other similar purely naval gun-carriages, preventer-gear is fitted, which can be at once resorted to, and these carriages have each two compressors, either of which is sufficiently powerful to hold the gun and control its recoil in any sea.

The rapid wear of the vent, to which this recent Shoeburyness experiment calls attention, is a serious evil, for it causes but a short life in action for the 38-ton gun, and a safe endurance of only 50 rounds under the most favourable circumstances; but what would be its endurance should the copper wads become displaced, or the gun have to be fired rapidly in cold weather?

I venture, however, to suggest whether such a gun could not be fired by means of a very strong electrical current passing through its closed breech-piece, or from a vent underneath the gun, either of which plans would probably stop erosion.

I now come to another important point, viz., the nature of the filling, called the *bursting-charge* of the projectile.

Experiments have conclusively proved the most effective bursting-charge to be gun-cotton, but the gaining twist gives its stud projectile an unsteady course through the gun, and hence gun-cotton cannot be safely used in our large guns as now rifled.

The action of gun-cotton is, however, being daily increased in intensity, and there seems little reason to doubt, that if it could be carried inside a shell through an armour-plate, it would, on bursting, shiver the ship's side or deck.

I will now call your attention to the effect which would be produced by special projectiles filled with gun-cotton.

Here is the model of a short mortar from which flat shells filled with 2 ewt. or more of gun-cotton, could be projected through the unarmoured sides of an enemy's ship—or this shell, a *flying-torpedo* as we may term it, could be projected so as to explode on falling upon the deck after passing through the unarmoured ends of modern iron-clads. (See General Hutchinson's Paper, vol. xi, page 40, Journal R. U. S. I.)

#### *Athly.—Armour Protection.*

*Deck-armour* offers many advantages, such as ease of repair, and being placed at an angle not readily penetrable, but the cumbrous *side-armour* which will be so difficult to repair if displaced, or even if much damaged, cannot yet be dispensed with.

The great point to be secured, is to reduce the length of the side-armour as far as possible, by judiciously lessening the number and increasing the size of the guns, to be protected by it; but this should be done so as not to impair, but rather to improve the ordnance-power of the ship. The inner circle, or citadel of armoured protection should be afforded by an armoured deck rising from some point at from 5 to 6 feet below the water to 3 or 4 feet above it. This would be in lieu of the under-water deck now in favour, and its comparative advantage is that "the cork of the bottle," as Capt. Wilmhurst aptly termed it, would be *above* instead of below the water-line. With an under-water deck, on the contrary, the shutters round the hatchways are liable to be shot through, and then the water passing through the ports or wounded side of the ship, would pour down these openings, hindering the working of her engines, and perhaps destroying her motive power by extinguishing the fires. *Upright side-armour* bracing the cross-armoured bulkheads firmly together and forming an enclosed armoured structure, will protect the guns and their crews, and during the operations of loading and pointing will afford security to the getting up powder and shell from below, and whilst passing these along to the guns; but this same armour should likewise be the outer, the armoured deck being the inner line of defence to the motive-power. A further protection will be afforded to her boilers, magazines, &c., by the coals and stores. And here I would advert to the dangerous fallacy advanced as to withdrawing the crews of the guns *outside* the armour to *within* it on passing an enemy. Such a course would most injuriously affect their "morale" in leading them to cower behind bulwarks, which after all, might tend to their more complete destruction in case of penetration of the armour. The huddling of the men together would prevent the working of the guns *within* the armour, and tend to create confusion, if not a panic; besides, the true principle of saving the lives of one's own crew and of enabling them to fire

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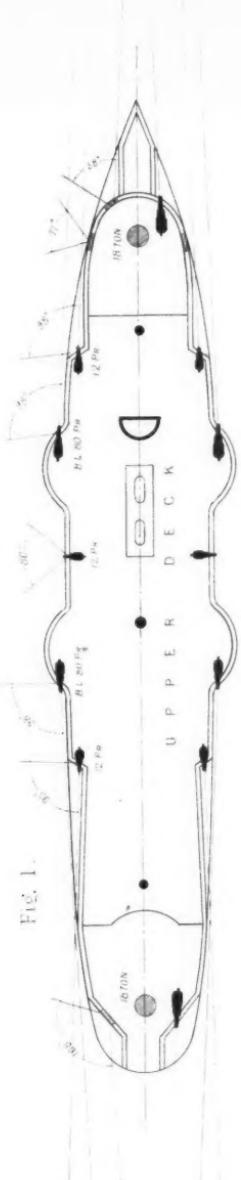


Fig. 2.

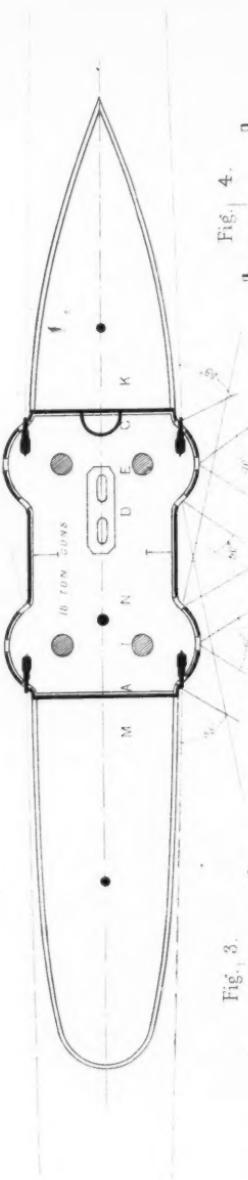
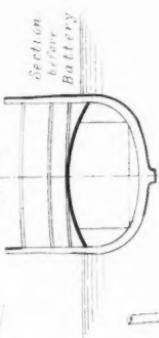
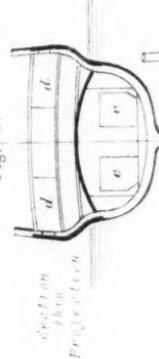


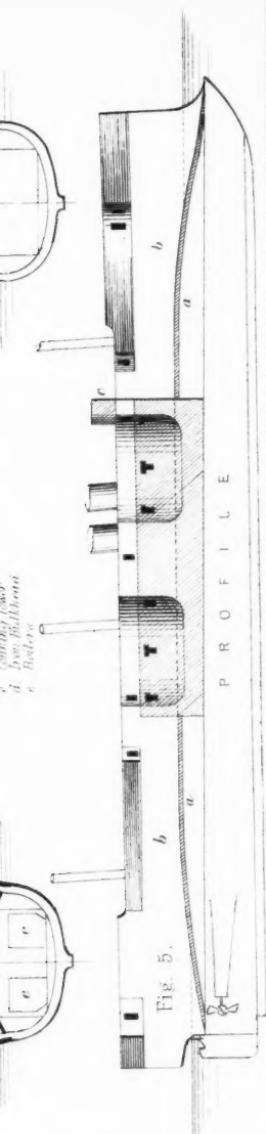
Fig. 4.



Tijō 3



a *Anterior Disk*  
b *Steel Silver & Topaz*  
c *Connico Lavor*  
d *From Billboard*  
e *Brabur*



ENGLISH.

AUSTRIAN - "TEGETTHOFF"

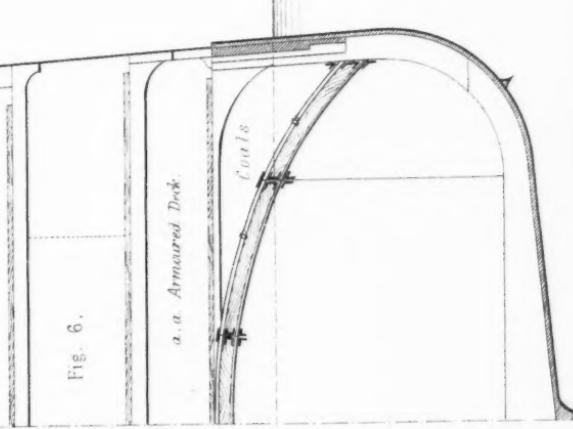
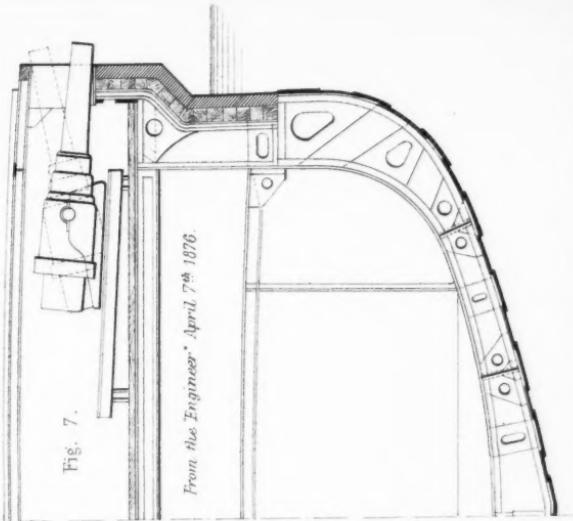


Fig. 7.





steadily and accurately, is to separate the guns widely apart, and to put bulkheads between them, to limit the destructive effect of splinters.

*5thly.—Speed.*

I need only say that a high rate of speed will enable the ship possessing it to overtake her enemy, and to place herself in the best position for continuing the action with the ram, and with guns discharging the flying-torpedo.

*6thly.—Coal capacity.*

This also is a very important element for securing success in warfare, for it enables a high speed to be maintained for a lengthened period, and provides for that quality which Admiral Selwyn has so happily termed, "sea-keeping."

In Part I of my paper I dwelt upon the *general* principles involved in England's Maritime defence, more especially as regards the *personnel*, and *defensive* warfare; I now propose to deal with the development of the *offensive* power of our fleet and the other points which are intimately connected with its efficiency.

Having described the weapons of offence and defence needed by a modern war-ship, I proceed to point out, firstly, the type of a ship in which these qualities can be, I think, best obtained.

*First Class Ironclad Cruizer.*

The first class ironclad cruizer would be of about the length of the "Nelson" and "Northampton," and by giving her a little more beam, keeping her floor flatter, and using steel largely, she could be built more completely cellular, have a stronger bottom and carry a heavier armament. The improved armoured deck I have already described as starting from the lower edge of the armour, and running above the water-line, the space underneath being filled with the reserve supply of coals. This deck would be carried forward to support the ram, and aft to strengthen the stern. (See Plate XIV, Fig. 5.)

Referring to the diagram of the "Nelson" and "Northampton" (now building), so as more clearly to indicate the method which would, I think, largely increase the offensive and defensive power of future cruizers, and render them more than a match for any war vessel afloat, I wish to point out that the aforesaid vessels are to mount four unprotected 12-ton guns, and two partly protected 18-ton guns on each broadside. The improvements I propose are, first to exchange these eight 12-ton guns for two 25-ton guns, which, according to the proportions of relative power, would be of equal force to the guns removed; to exchange the four 18-ton guns for four 25-ton guns, and to bring the armoured bulkheads much nearer, and join them in one solid structure with the cross bulkheads. I would then place one 25-ton gun forward and one aft, *outside* the armour, which would give a total of eight 25-ton guns, six of them fully covered by the same armour as that which forms a first line of protection to the

engines and boilers, the armoured deck being their inner defence. This arrangement would enable the proposed ships to fire five 25-ton guns on either broadside; three 25-ton guns ahead, and three 25-ton guns astern. The broadside of one of these cruisers, which I name the "Collingwood," would consequently be of more than double the power of that fixed for the "Nelson" and "Northampton"; her bow and stern-fire more than treble; and the whole area covered by the "Collingwood's" fire more than twice that of these ships. This result is obtained by using the same small rear turn-tables as those by which the 18-ton guns in the "Sultân" and "Hercules," and the 12-ton guns in the "Shah," &c., are turned from port to port.<sup>1</sup>

*Second Class Ironclad.*

The second class ironclad would be about the length of the "Raleigh," but with more beam and a flatter floor, and would carry four 18-ton guns under armour on the main-deck, and two outside on the upper-deck. If unarmoured, a similar armament to that described could be carried on precisely the same lines as those of the "Raleigh," but I should still prefer an increase in breadth, and greater flatness of floor, as more strength could then be given to the bottom, and a larger coal-supply carried. By this alteration, also, the 200 tons or thereabouts of ballast which are carried in the "Raleigh" could be advantageously dispensed with.

The plan of "projecting-side" was the result of my experience gained in the Channel Squadron in command of the "Research." It was laid before the Admiralty in January, 1867, and subsequently published in the *Engineer*. The projecting-side was devised in conjunction with the small turn-table already mentioned, as a means of developing to its full extent, the plan of mounting guns on the broadside, so as to bring up the power of our heavy broadside cruisers to at least that of turret-ships, which have the serious disadvantage of too few guns.

I notice that the Austrians have availed themselves of a similar plan for the "Tegethoff," which Mr. Reed described at the last meeting of naval architects as the newest and most important of the Austrian ironclads; and in speaking of the projecting main-deck battery, he says, "that in adopting the system I consider that the Austrian Admiralty have acted wisely, for it has many very great advantages, and no disadvantage of any moment that I have been able to discover even in a seaway." Those accustomed to watch the rolling of ships at sea will endorse this opinion, but will not I think prefer the angular shape of the battery of the Austrian to the original curvature of side which tends to lessen a roll and also to prevent a hard blow from the sea such as would strike against any angular projection

<sup>1</sup> The least number to secure fighting efficiency is about one plate-piercing gun to every thousand tons of the ship's displacement, the guns to be of the following relative sizes, namely:—

4 18-ton	guns for 4,000 to 5,000 tons.
6 25-ton	" " 6,000 to 7,000 "
8 35-ton or 38-ton	" " 8,000 to 9,000 " R. A. E. S.

(Plate XIV, fig. 7.) The "Tegethoff" is one of the most powerful broadside-ships afloat, if her guns be, as Mr. Reed says, of 27 tons weight. She partakes, however, of the disadvantages common to all broadside-ships, viz., of having a very confined arc of training for her guns, only one heavy gun bearing through an arc of  $100^{\circ}$  ahead, and only one gun through  $100^{\circ}$  astern. In the general arrangement of guns and armour, the "Tegethoff" is very similar to the "Téméraire," but the latter mounts, in addition, one 18-ton and one 25-ton gun, each in a fixed turret on the upper deck. (See Plate XV, vol. 17, Journal R. U. S. I.)

Before endeavouring to give you a glance at a naval action, I will briefly describe the differences between a broadside- and a turret-ship. The guns of the broadside-ship are always ready for action, and can be fired without danger of blowing away your own men, or any portion of your own ship. Heavy broadside guns are mounted so as to be pointed with the greatest nicety by hand-power on motions or signs from the captain of the gun, who, keeping his eye fixed upon the object he is aiming at, can fire the instant the enemy rolls, and exposes her unprotected bottom. Shot may then succeed shot with great rapidity and accuracy. Nor is one gun hindered by the loading or firing of another, except as regards "smoke." This drawback of smoke indicates the necessity for giving up the continuous popping from small guns, and for increasing the power, and lessening the number of the guns. It also indicates the value of a smokeless powder especially for non-piercing-plate guns, so as not to hinder the firing of the heavier ordnance.

But here let me add, that no large ship can be properly armed unless she has a suitable proportion, relative to her size, of light, quick-shooting, and accurate guns for specific purposes, viz., to ward off torpedo-boats, and to do the work of counter-mining with flat-fronted shells filled with gun-cotton; also to clear the decks of an enemy, and to destroy a mosquito fleet whether intending to attack with torpedoes, or by boarding, or by both combined. (See Appendix, table B.)

A well-arranged broadside-ship of the type proposed would secure what Admiral Selwyn advocates, viz., "Having a gun battery protected by the same armour which protects the ship;" and likewise what Sir Spencer Robinson truly deems most essential, viz., "the protection of the uptakes and crowns of the boilers, and of the motive-power." (Plate XIV, figs. 3, 4 and 5.)

The turret-ship, on the contrary, carries a massive weight of turrets to protect her guns, communicating by armoured trunks with the under-water and other decks. It, however, affords a better protection to the guns, gun-carriages, and gunners than any other adopted plan. It also possesses the advantage of central position, and of carrying the heaviest ordnance at a great height above the water. This is undoubtedly a great point, *especially in rough weather*.

On the other hand, the enormous weight of the turret and its guns cannot be pointed upon an object by hand-power, and, consequently, requires steam to intervene between the hand and the pointing-gear of the gun. The result is, that an interval of time elapses and a consequent

loss of accuracy, and this is further increased by the sights being placed upon the top of the turret some feet above the level of the gun. This, perhaps, is what Captain Price recently referred to in speaking of the anticipated inaccuracy of the 81-ton and other large turret guns, and not to any gun when mounted on the broadside carriage on which the 38-ton gun was fired on the practice ground at Shoeburyness. There is the further disadvantage and danger of having to fire over the deck without any *guide* for laying the guns *even by day*—so that a hasty shot may cut away a mast, rigging, and boats, or be sent through the deck, should the gun be fired ahead or astern with *depression*.

The "Monarch" has two 12-ton guns under her forecastle, the crews of which are, in my opinion, exposed to nearly as much danger from their own guns as from those of an enemy—an opinion in which our Constructors seem to share, for no guns are placed on the decks of the later turret-ships.

In a former commission of the "Monarch," a shot was fired, which, just passing over the Captain's head, sent the wire shrouds of the mizen-mast flying in innumerable splinters. This leads me to doubt whether wire rigging may not prove as prolific a source of danger in action as the firing of studded shell across the deck.

Lastly, there is the want of light guns, which is a very great drawback to the efficiency of a fighting-ship, and one which might lead to the prevention of accuracy of aim, if not to the silencing of her heavy guns by the maintenance of a continuous fire upon the sighting, ports, and the loading arrangements of the turrets.

The smaller vessel drawn here (see Plate XIII, fig. 5), which I call the "Victory," may be taken to represent a second-class armour-clad, carrying six 18-ton guns. In single combat, her broadside power would equal that of the "Sultan" through an arc of  $130^{\circ}$ , but for the remaining  $230^{\circ}$  it would exceed it twofold. Supposing that the "Victory" had forged ahead or dropped astern, and were to fire flat-headed steel shell, which are not deflected like round-headed shot on touching the water, and would penetrate at an angle of  $66^{\circ}$  from the perpendicular, she would be pouring in three 18-ton gun shell and receiving the fire of only one 18-ton gun, which, if the angle were  $40^{\circ}$  from the perpendicular, would fall harmlessly from her side and from her armoured cross-bulkhead.

Should the "Victory's" shell not explode on striking the "Northumbria's" side, it would certainly sweep her decks, and if it did little previous damage, it would probably bring up against the armoured bulkhead and explode, or be deflected downwards through the crowns of her boilers or through her engine-room.

Tired of this unequal combat, the "Northumbria" puts her helm down so as to bring her broadside to bear; but before she has steadied herself by reversing her helm to stop the swing which would be fatal to accuracy of fire, the "Victory," which has also put her helm down, comes flying onwards and rams her well forward to escape the danger of any towing-torpedo.

I think that I have now conclusively shown—

1stly. That the broadside ships I have proposed, viz., the "Collingwood" and "Victory," by the use of the same means as those employed to work the heavy guns of our present broadside armour-clads, can be placed upon more than an equality with turret ships.

2ndly. That armoured bulkheads, to protect from raking fire, are of little value, unless the armour is joined at the two other sides so as to complete the enclosure, as already shown in the "Collingwood" and "Victory."

3rdly. The inefficient protection of plated decks wholly under water.

I need scarcely enlarge further upon the disadvantages attendant upon the present type of broadside ship. Those who have commanded such ships in the Channel squadron are aware of these disadvantages and the difficulty of keeping their guns bearing upon any object, owing to the present restricted arc of training. This restriction is very damaging to efficiency, as broadside guns can so seldom be fired when steaming in a squadron. Even in single actions, when a ship can manœuvre with freedom, and fire without fear of striking a friend, to be forced by the confined arc of training to fight abeam or nearly so, and perhaps rolling heavily in the trough of the sea, is not the way to secure victory.<sup>1</sup>

The having fewer and larger ports has been urged as an advantage, but in single combat, an enemy would only be opposite one port of each projection at a time; were the action a combined one, the great importance of being able to bring one broadside to support a hard-pressed consort, whilst engaging an enemy with the other, or to fire past a friendly ship, must be apparent to all naval men. The ports in the projecting rounded battery would also enable the captains of the guns to obtain a wide field of view, and hence to keep their guns bearing upon any enemies round the whole sweep of the horizon. (Plate XIII, fig. 7.)

*Improvement of our present Ironclads.*

Permit me here to mention what Austria is now doing, viz., replacing the wooden sides of three of her ironclads with iron sides and adding additional armour in vital places—a conversion which Herr Romako states—"will not cost more than the building of "one ironclad." I venture also to quote from *The Navy of May* 13th, 1876, Mr. Reed's words: "The authority of the naval architect "comes in, I apprehend," in stating what qualities are, and what qualities are not, procurable in a ship, and that their opinion as "to "the value of ships for sea-going and fighting purposes are quite "subordinate to the opinions of Naval Officers."

*1st.—The Sultan.*

This ironclad, at the time she was equipped, was considered as one of the finest, and is certainly one of the best-built vessels in the world. Commencing with her bottom, the 600 tons of scrap-iron and

<sup>1</sup> The adherence to the old style of sailing-ship broadside-battery sacrifices more than half of the gun-power. Broadside guns are only effective through an arc of from 66° to 76°, leaving upwards of 100° of total inefficiency.

cement placed there, is now so much dead weight, and therefore a source of weakness, and must tend to strain the structure where it is comparatively light, viz., between the armour and the bottom, on the vessel's receiving any shock from ramming, or being rammed. This dead weight, which if the vessel took the ground would risk her destruction, could be advantageously replaced by a cellular arrangement, carried out somewhat as Mr. Boulds suggests. The cost of putting in 500 tons of such strengthening, he estimated at £20,000, but our own highly skilled Constructors would, I believe, give equal strength by putting in less material, and at less than half this cost.

To balance the removal of the dead-weight from the bottom, and the carrying up of the cellular structure above the water-line, the cumbersome top-armoured structure, weighing, if I mistake not, 300 tons, should be removed, so as to leave a clear deck and an open view fore and aft for efficiently handling the ship.

With this structure I would sweep away its two 12-ton guns and turn-tables, which would be in the way of working the sails, and utilize the turn-tables for the two 12-ton bow guns (which are now arranged to fire ahead only), so that they would each work two ports, and thus command a fire from ahead to abeam the beam. In the stern, abeam the armour, another 18-ton gun, sweeping round the stern and crossing fire with the bow-guns, could be easily mounted on the main deck on each side. This with the necessary strengthening would weigh upwards of 80 tons. The result of the change would be a saving of nearly 500 tons in weight and a much stronger and better arranged ship, together with a fifth 18-ton gun for broadside-fire.

The five ships of the "Audacious" class could be somewhat similarly improved, viz., they could mount six 18-ton guns, with shortened slides in their main-deck batteries, instead of six 12-ton guns, and be provided with two other 18-ton guns outside their armour, viz., one at the bow and the other at the stern, their upper decks being locally strengthened; the ships would thus discharge five 18-ton guns on the broadside, and the danger of the bursting of a single shell, or of the vessel's catching fire, in the central battery, and thus stopping the firing of *all* her guns, be prevented.

The armoured structure upon the upper deck, weighing about as much as that of the "Sultan," could then be swept away and the ballast replaced by cellular strengthening. This alteration would remove a weak superstructure, would save nearly 300 tons in weight, and would enable a much larger coal-supply to be carried.

Both the "Sultan" and the "Audacious" class should be provided with suitable light upper-deck guns, mounted upon slides, 2 feet shorter than those now adopted. See Plate XIII, fig. 6.

The "Bellerophon" is deficient in bow-fire, and should be supplied with two 18-ton guns, mounted in indented ports, *outside* the armour of her main deck, and at least two more 18-ton guns to replace 12-ton guns in her main-deck battery *within* the armour. The two  $6\frac{1}{2}$ -ton guns on the broadside of the upper deck should be done away with.

This vessel, from her fine armoured tower, would make a capital flag-ship from which to direct a squadron.

The "Minotaur" class are well built vessels, strong in the bottom, and showing, I believe, no signs of incipient decay. Their upper decks are firmly braced, and with local strengthening could easily carry four 38-ton guns, mounted on the same plan as the gun at Shoeburyness. On the main deck, so as not to add greatly to the total weight, a few powerful breech-loading 80-pounders, capable of piercing the thinner armour-plates, might be mounted. These, with some anti-torpedo 12- or 20-pounders, would render the "Minotaur" class, powerful ocean-cruisers. As their proposed main batteries would be on the upper deck, they might take in a very large supply of coal below. In war-time, the spacious decks of these vessels would be valuable for housing and lowering torpedo-launches for an attack; and this room would be equally valuable for working the Harvey and other torpedoes.

The "Minotaur" class would prove most serviceable for laying out light telegraph-lines; and for making the electric and sound-signals already suggested as a means of communication between our cruisers, mentioned in Part I. As first-class troop ships, they would be unmatched, and just the vessels to fight their way with the troops which the author of "The Army Question, 1876," considers might be used "in support of an ally with extraordinary effect by striking at the communications of an enemy so directly as to give it the effect of a much greater force."

I will only refer to one unarmoured vessel, the "Inconstant," as her 12-ton gun-carriages are placed upon slides which are too long and two feet too far in-board; this consequently interferes with the passing of powder and shot behind them. On the other hand, from her guns being so far in-board, the sights for pointing them are blocked by a slight roll, and the fire and smoke from the discharge are not carried sufficiently far from the ship's side. This vessel is also deficient in bow and stern-fire, which might easily be given.

I need not go further in enumerating the improvements which could so easily be made in our existing ships; but I do wish to urge that our coast-defence armour-clad ships should be made efficient "sea-keeping" vessels.

What is now wanted, however, to carry out improvement, is the vigour which Captain Coles threw into the advocacy of the turret, and like him, for us to throw aside old forms of construction which modern warfare has rendered obsolete. Mechanical and technical knowledge is wanted; the younger Officers might therefore at once, while in the full vigour of their activity, pass through the Shoeburyness course side by side with "armed science." They would thus gain a far better knowledge, both theoretically and practically, of the relative values of armour and guns, than is now possible for them to do.

Foreign military governments pay the expenses of their Officers, and secure admission for them at our various trials of ordnance and armour. The British Government places the naval Officer on half-pay, puts few facilities in the way of his acquiring information, and allows him to go at his own cost to these experiments. Besides the advantage of working side by side with a Corps *necessarily* better

educated than his own, the naval Officer would learn at Shoeburyness what cannot be learnt on a movable platform in harbour, viz., how to lay a gun with exactitude, for he would be enabled to observe the result of his own firing day by day, as the precise spot where each shot struck is measured and marked down; his errors would thus be corrected, and steady improvement be made.

To give a more perfect knowledge of their weapons to the whole Navy, as well as to instruct the untaught masses of our coast population, a larger establishment than that at Shoeburyness would be needed; no better place could be found than the Crosby Sands off Liverpool, adjoining which a dépôt for the marines could be advantageously formed, and this corps, now 500 or more below its nominal strength, and having only a sufficient number in barracks to keep up the supplies to the ships in commission and to discipline recruits, could be rapidly augmented from the neighbouring counties and from the north of Ireland. Seamen, fishermen, and boatmen also, would be attracted to such an establishment, and, were due encouragement held out, would quickly take an interest in and learn their duties, and being then passed into the drilled Reserve, would be ready for embarkation on board our war-ships.

I have now endeavoured to show how *thorough* instruction could be imparted to our naval Officers and seamen, before being embarked in war-cruizers for more practical work, and I have indicated the qualities which are, at the present day, needed in our war-ships.

Permit me now to express a hope, that more attention may be hereafter directed to those improvements, which though costing little, as Mr. Brassey recently remarked, while the vessel is under construction, would add greatly to her efficiency when built. I have likewise endeavoured to show how the vessels which *are* built might, together with their armaments, be improved, so as more fully to meet the requirements of modern warfare.

In my first lecture I pointed out the necessity for embodying in one comprehensive Reserve-force the whole of our able-bodied seafaring population, and I indicated the means by which this could be effected; and I also showed how our vast mosquito fleet of river steamers, steam-tugs, &c., could be utilized for coast defence. I likewise indicated how our war-cruizers and merchant-steamers could act together for the preservation of our commerce, and for destroying the foes of our country, and I showed the advantages of more extended telegraphic communication.

In the discussion which followed, the growing influence of sailors' homes upon the *morale* and patriotism of our seamen was adverted to by me. May I now add that these sailors' homes would prove valuable *nuclei* for the diffusion of that public spirit which it is necessary to awaken, so as to stir up the slumbering enthusiasm and the great energy of our hardy maritime population; thus moved, it would find a pleasure in being intelligently taught to handle the latest weapons of war, and perhaps a still keener pleasure in using them in its country's service.

The little cloud in the east is extending, but we may trust that the time for action will find us not unprepared for the high destiny assigned us in "the Book," which our gracious Queen acknowledged to be the foundation of our national prosperity, and wisely use at once the ample means with which the *Giver of All has so richly endowed us.*

Then, whatever empires have passed away, or may be overthrown in the coming struggle, we shall be found still occupying the high position of "Queen of the Ocean," and using our power, not only for the benefit of our own people, but also for the maintenance of right throughout the world.

#### APPENDIX.

Table A.—7-inch gun competition. Projectiles with hemispherical ends. Committee pattern. Mean of all rounds fired. Shot.

Guns.	Initial velocities. Feet.	No. of rounds.	Elevation. °	Means.			Weights.	
				Of all ranges, Yards.	Difference of ranges, Yards.	Reduced deflection, Yards.	Of powder Lbs.	Of shot, Lbs.
Iron ribbed shot (long bearings) .....	1,594	15	2	1,585	17·7	1·1	25	110
French studs .....	1,529	..	..	1,473	62·2	1·9	..	..
French (Palliser studs) .....	..	10	..	1,446	19·9	2·0	..	100
Shunt .....	1,510	..	..	1,399	29·6	1·0	..	110

Table B.

The complete armaments of the "Victory" and "Collingwood" (improved broadside ships) would be as follows:—

"Victory," 2nd Class Cruiser.

No.	Description.	Weight. Tons.	Ship's displacement.	
			Tons. = 108	Tons. 5,000 to 6,000
6	18-ton guns .....	= 108		
4	64-pounders .....	= 13		
6	12-pounders .....	= 3		
16		124		

"Collingwood," 1st Class Cruiser.

No.	Description.	Weight. Tons.	Ship's displacement.	
			Tons. = 200	Tons. 7,000 to 8,000
8	25-ton guns .....	= 200		
6	4-ton guns .....	= 24		
8	12-pounders .....	= 4		
22		228		

Table C.

In the following table I have endeavoured to show the sizes and numbers of guns which would be suitable for each size of vessel.

No.	Description.	Weight.	Ship's Displacement.
4	18-ton guns .....	Tons. 72	Tons. 4,000 to 5,000
2	3½-ton 64-pounders B.L. ....	6½	
6	½-ton 12-pounders B.L. ....	3	
12		81½	6,000 to 7,000
6	25-ton guns .....	150	
4	14-ton plate-piercers B.L. ....	16	
6	½-ton 12-pounders B.L. ....	3	8,000 to 9,000
16		169	
6	35-ton guns .....	210	
2	38-ton " U.D. ....	76	
6	4-ton " B.L. ....	24	
8	½-ton " 12-pounders B.L. ....	4	
22		314	

<sup>1</sup> A 4-ton gun was manufactured for India in lieu of the 64-pounder.

The last armament would be for special fighting ships, and could be well carried on the 8,490 tons displacement assigned to the "Ajax" and "Agamemnon," in lieu of the four guns which are intended to constitute the armament of these vessels.

The CHAIRMAN: The subjects that have been brought before us to-day by Captain Scott are very extensive and require a great deal of thought. I hope, and think that we shall find some gentlemen present who are willing, as well as we know they are able, to make remarks upon them, and to enlighten us still further with regard to some of the details which have been brought before us.

Commander W. DAWSON, R.N.: The paper, as you, Sir, have already remarked, extends over a great variety of subjects, so various and so large, that it would be improper for any one in my position to occupy the time required for an attempt to discuss them all. I have known Captain Scott's ideas for a great number of years on the question of ships' armaments. I have very often differed from him very widely indeed, but I have generally found that when I have subsequently taken the trouble to study more attentively the particular question on which we differed that Captain Scott was generally right, and I was generally wrong. Under those circumstances I feel rather a difficulty in rising to discuss a paper, the criticism of which must be to find out the faults, and not to eulogise the good points. It is full of good points—full of instructive matter for deep thought, which will profit us all not only in the hearing now, but in thinking them over quietly at home. I will deal simply with the question of the offensive powers of ships, leaving the other very tempting questions to be found in this paper. Any one who studies the relative armaments of our ironclads will find that from the first introduction of ironclads to this day, there has been a constant diminution in the gross tonnage of the ordnance carried, and therefore of the offensive power; it becomes therefore an important question to decide in what way this diminished weight of armament ought best to be distributed. The 18-ton gun is a very serviceable weight, and I

think it is capable of having its perforating power largely augmented, without any material addition to its eighteen tons of metal. I take that gun as a standard of weight to start from, and I would suggest to Captain Scott that his advocacy of the 25-ton gun is, in my judgment, not a good one, inasmuch as the 25-ton gun is generally looked upon as one of the least effectual guns for its weight that we have. I am speaking, of course, of its power in reference to its weight. Are there no means of increasing the perforating value of the 18-ton gun except by doubling its weight? When engineers wanted to double the power of the steam-engine, what did they do? Did they take the weight of the original engine and shafts and boilers, and multiply them by two, and then build an engine of double the original weight in order to produce double the power? Is not that something of the way in which ordnance manufacturers proceed? An 18-ton gun, throwing a shot with "decidedly the lowest velocities," is found incapable of doing the required work. We take that 18-ton gun, and multiply by two, and turn out a 35-ton gun. We then find that a 35-ton gun, with "decidedly the lowest velocities," is incapable of doing the work, and we multiply that weight by two, and we have an 81-ton gun. Why is that 81-ton gun wanted? Because a "low velocity" 35-ton gun won't do a given work. Why is the 35-ton gun wanted? Because a "low velocity" 18-ton gun won't do the work. The work to be done by the shot is to perforate a given thickness of armour. What are the properties required in a perforating shot? A sufficient weight and velocity. Why then may not sufficient weight and velocity of shot be projected from the smaller gun by some ingenious arrangement, just as the engineer has got increased work out of the same gross weight of steam engine? That is a question which I think ought fairly to be faced. It seems a very unintelligible brute force sort of way, that of simply multiplying the weight of the gun by two, when you want to get more work done by the shot. There must be, and ought to be, some way devised by which more work might be got out of shot projected from guns of the existing weight. Is it that the bore of the gun is not large enough or small enough? Then why not make it a little larger or a little smaller? Why cannot heavier and longer shot be got out of it? or why cannot the shot be driven out of the gun faster? What obstructs the egress? There are several causes of obstruction. Some years ago, some competitive guns were compared, and it was discovered that when shot of the same diameter and weight were driven from guns with different rifling appendage, one particular rifling gave "decidedly the lowest velocities." The rifling appendages which were upon that "slowest velocity" shot are precisely the appendages which we now have on the shot, which fails to perforate when discharged from our present 18-ton gun. Why should you deliberately stick to a shot which the late Ordnance Select Committee reported to have "decidedly the lowest velocities," when you want increased perforating power; why, again, should you not increase the weight of the shot in the 18-ton gun? It is only 400 lbs. weight; why not make it 800 lbs. weight, if required? Because the shot must be so much longer? What is the harm of length? The shot will require more spin. If it requires more spin, there must be a sharper twist in the gun. If there is a sharper twist, you must have stronger rifling appendages, or a longer bearing and greater grip in each groove; but the grip in the groove is only one inch; if the shot be ten feet long or two feet long, it has still but one inch grip in the groove. If the shot be 100 lbs. weight, or one ton weight, it has still but one inch grip in each groove. That is quite contrary to all mechanical science. In proportion as the work to be done by the rifling appendage is greater, there ought to be a longer bearing to perform that work. Supposing that instead of one inch stud in each groove doing the rotating work of the 400 lbs. shot, you could put in fifty studs, you would get a fifty inch bearing—the whole length of the cylindrical parts of the shot. By dispersing the effort of rotation over the whole length of the shot, you would be enabled to give the grooves a sharper twist, so as to rotate a much longer shot, and to fire a much heavier projectile with greater space for a much larger bursting charge, and with much more perforating force. There is one direction in which it might be possible to make improvement. But there is another advantage in a longer shot, which is this:—that the longer the shot the more regular is the combustion of the powder in the rear. The longer shot seems to come out of the gun in a steadier way, so that the combustion of similar charges of powder is

more nearly similar. It is quite true that the powder-pressure goes up higher, but there are not those oscillations of pressure which have been so very disturbing to the minds of all artillerists. That is an obvious advantage in increasing the length and weight of the shot. Then we may increase the size of the chamber. In our younger days, the chamber used to be made smaller than the rest of the gun; but now it has been discovered that by making the chamber larger and the cartridge shorter, a better combustion of the powder is obtained. There are, no doubt, other ways and means which might be devised by which guns of given weight might be made to do more work, so as to perforate greater thicknesses of armour. As individual guns are doubled in weight, there must be a corresponding reduction of the number of guns carried by each ship. Four 18-ton guns are roughly equal to one 81-ton gun. Now, supposing the shot from both guns alike capable of perforating the ironclad attacked, then I would say that the four guns with the four pair of eyes aiming were far more likely to make hits than the one pair of eyes with the one 81-ton gun. I wish to bring this very prominently before your minds, that firing a gun in a sea-way, and hitting the object with the shot, are two different things, and that it is a very small proportion of the shot which are fired, that do hit; therefore, to put an 81-ton gun in place of four 18-ton guns is simply to reduce your chances of hitting four times. It is a question of common sense; but, at the same time, of nautical experience. It is one thing to fire from a moving platform at a moving object at an unknown distance, and quite another thing to hit it. There is no look-out man at right angles to the range, and whilst those in rear of the gun are thinking that the shot is falling short, it is perhaps passing over the object, and while those in the line of fire think that it is going over, it may really be falling short. These things must be regulated by a certain degree of attention to the doctrine of chances. If we are only to have a given weight of armament, it would be preferable to have four 18-ton guns rather than one 81-ton gun, always supposing, of course, that perforation is secured. Therefore, I say, attention ought to be more decidedly directed to improving the perforating force of the smaller gun so as to get more effective work out of a gun of a given weight. There appears to have been a recent experiment at Shoeburyness, during which a 35-ton gun was fired at intervals one hundred times. I do not wish to make any imputation upon any one; but, as a matter of human nature, I venture to suggest that a gun-manufacturer who is testing his own gun will naturally endeavour to show off its special merits. An independent authority, testing that gun, would, on the contrary, endeavour to find out its demerits. Now, you have the gun-manufacturers trying the guns they have already made, and trying them under the equivocal circumstances that those guns are doubted by the sea-artillerymen who have got to fight with them. It would be far more consonant with human nature, and more satisfactory to the Navy, if a doubtful gun was tested by independent persons, instead of being tried by the gunmakers, who send down to Shoeburyness a squad of very experienced and very careful nurses, who have had great experience in nursing doubtful guns in all sort of ways—so much so, that the gun itself is popularly called an "infant!" It requires a certain amount of nautical experience to ascertain what would be the consequence of 2-inch cubes of hard gravel being fired out of a 35-ton gun over the decks of friendly ships and open gun-boats; and as to what would happen if the wrong powder was employed. These are matters of experiment upon naval guns of which naval men are the proper judges; and I would suggest that experiments of that kind to be at all relied upon, ought to have been done something in this way:—to telegraph to the Admiral in command of the fleet in the Mediterranean to order the "Devastation" to fire a hundred rounds from one gun in such a manner as would simulate to the best advantage the conditions of a naval action; and that a committee of naval Officers from that fleet, taken as they are without any direct communication at all with the War Department or Admiralty, should devise and carry out a scheme for firing one hundred rounds as in a supposititious naval action, and for observing very carefully the effects on vessels in the line of fire and upon the gun. Supposing the results to be what they ought to be—perfectly good—I am quite sure all naval men would be thoroughly satisfied with such a report; but I do confess from my information as to other experiments tried in the same way, that I do not think an experiment tried by a gun-manufacturer upon his own gun, and

carried out by experienced ordnance nurses, does produce the same amount of confidence amongst seamen as if the experiment on a naval gun were conducted by somebody else.

General COLLINSON, R.E.: I think we may congratulate the Institution and the country on the general tone of these discussions, going, as they have been going, in the direction of showing the advantage of being prepared for offensive as well as for defensive warfare. We seem to have begun to acknowledge that the real problem put before the Army and Navy in war-time, is not so much the defence of England only, or the fighting of a naval battle only, as to bring the war to a satisfactory conclusion in some way or other. I think also that English people are beginning to understand a little more clearly that these islands are the citadel of our Empire, and that our best policy in warfare is to put that citadel in an efficient state of defence, so that all our active offensive weapons can be employed against the enemy. I heard an expression used by a brother Officer of mine the other day, which, I think, is a very happy one,—that the marine forces are the right arm of England and the land forces are the left arm of England. We know a man generally uses his right arm to strike out; and therefore I think it is a satisfaction to feel that the Navy are taking up their part in warfare more with that view of their work. We also know that a man generally uses his left arm for defence, but also that he is quite prepared to strike out with it when necessary; and I may say I think the Army is considering its duty in that respect also. Viewing, therefore, the Navy in the light chiefly of a great offensive weapon, I venture to suggest to Captain Scott that there are two points in his classification of the power of a war-ship in which he might add to them with advantage. One is—the power of manoeuvring—the power of turning the ship; I presume that would be most clearly expressed by the diameter of the circle in which a vessel can turn. The second element in the strength of the ship, which I think all naval men ought to include in their calculations, is the crew, not only as to numbers but as to efficiency; and I think from what we have heard of the power of rams, and guns, and ships to-day, we shall feel that after all, a great deal depends upon the efficiency of the crew, and that it will always be a great satisfaction to the British nation to feel that it is so. Now I venture to make a suggestion to the naval men present in considering the subject more particularly of defensive warfare. It is not often that the Army can make suggestions to the Navy, or that the Army considers itself a little better prepared for war than the Navy; but I do think the War Department has made a very great stride in this last year, in their mobilisation scheme, by which, on any declaration of serious war, the whole of the land-forces of the country will be assembled in different positions in the country most suitable for its defence; and also that some, if not all, of the army corps will be quite prepared in their equipment of men, horses, guns, and stores, to proceed on any expedition. But the part of the scheme to which I wish to draw the attention of naval men is, that the coast-line of England is intended to be divided into districts, and that in the mobilisation-scheme, certain Staff Officers and certain troops will be appointed to each district, who will be responsible for all the defensive elements in that district. I will suggest, in taking up the question of the naval defence of these islands, that that idea should be carried out as to the coast-defence; that it should also be divided into naval districts, which may very properly correspond with the military districts, and that an idea should be formed of the number of coast vessels armoured and unarmoured which would be necessary for the defence of each district, and where the armoured vessels are to be obtained, and where the unarmoured vessels are to be obtained; that is to say, where you can put your hand upon merchant steamers, river steamers, and coasting steamers, suitable as an auxiliary defence, and how many would be wanted, and where these vessels could be stationed at once in time of war as the centres of the naval defence of the coast; and, more especially, what number of men you would require for the working of these vessels, and how you will be able to get them out of the fishermen and seafaring men on the coast of England. I think if we could get that further step in the naval defence more clearly laid down, as it has been in the military defence, we should put this citadel of our Empire in a more secure state, and leave the active fleet and the active army more ready for offensive operations. One other point I wish to allude to with reference to something said upon the subject of testing the guns at Sho-

buryness. I do not think it is right to say that the manufacturer of the gun tests his own gun; because really the Officers working at Shoeburyness in all the experiments there, have nothing whatever to do with making the guns, and sometimes the guns come from private manufacturers. They are, I have no doubt, as perfectly willing to criticise any gun that comes to them and to find fault with it, as any naval man would be; and I feel quite certain—that as far as such a trial can be made in a place like Shoeburyness—it is a fair trial. At the same time I quite allow that a more satisfactory trial would be one more nearly assimilated to the actual conditions of war.

Major MONCRIEFF, F.R.S.: The great importance is evident in the present transitional state of naval architecture of such lectures as the one we have listened to, and they give rise to discussions on methods of treatment likely to be of advantage to the Service. I have some delicacy at present in making remarks with regard to that part of the question on which, of course, I am expected to speak. In dealing with this subject, on this occasion, the broadside, the turret, and other methods, have been brought before the meeting, but I did not observe that Captain Scott referred at all to one method which is calculated to give all the advantages of the "turret-“system" without its defects. That method, namely, "the disappearing system," also bears upon another part of the subject of the lecture, namely, the exposure of the men and of the armaments to the enemies' fire. It stands to reason that the application of the disappearing principle, properly carried out, enables the men to work the guns under cover of iron armour, which is considerably below the port through which the fire is delivered; it thus does away with the necessity of that weighty belt of armour required to protect the men in the other systems of mounting the artillery on board ship. While making these remarks I am not the least surprised, nor do I complain that my subject should have been omitted from this lecture. It unfortunately rested upon two stools, one at the Admiralty, and one at the War Office, and it has fallen down between them; it is not, therefore, in so prominent a position as it might have been, had I been more fortunate. I hope before long, however, that it will take its proper place, and receive the same justice as other alternative systems, so that any advantages it possesses, may be utilised for the benefit of the Service.

Mr. DONALD CURRIE: I will only say a few words, not from any technical knowledge I possess as to the firing of guns, but as to the management of ships. It appears to me that the question in the next war will be one of steam-ship management. The quality of coal you have in your men-of-war will help you to gain a battle. If you start with a thousand tons of one class of coal in your ship, and another vessel has the same quantity of inferior quality of coal, the one ship will beat the other if the captain knows how to handle her. You have not, as far as I can judge, sufficient graving-dock accommodation at your naval stations round the world for the risks of maritime warfare. How would a steam-ship after a collision, or after damage in action, keep afloat and get repaired if off the Cape of Good Hope? Again, with reference to the Mercantile Marine (it may not be proper to go into that question), the Government are now elaborating a scheme for the employment of private shipping during war, but it will be found that there are many available and suitable vessels for use in event of hostilities, some of light draught for river work, others fit for ramming, others for torpedo-carrying in shallow water, others which can steam 12,000 miles, carrying coal the whole way, at from 12 to 14 knots' speed. The Government are preparing these plans, and they will develop their proposals at the proper time, but it is no question that there are hundreds of ships which at a given moment in the Mercantile Marine will be drawn into the Service very readily. With regard to manning our ships, it would be well to press Her Majesty's Government to carry out a system of training sailors, not only educating them well and subsidizing vessels to carry them, or helping the Mercantile Marine so as to get the use of them at the proper time, but by pushing on the Naval Reserve and encouraging it. You might have at a given moment a man-of-war of great efficiency. One of our ships went to sea the other day with eleven-twelfths of the crew belonging to the Naval Reserve, and the Captain was one of your own instructed Officers. No men can handle steamers in war so well as those who are every day at sea, but Naval Officers are compelled to stay at home perhaps for half-a-dozen years, and then

are ordered to go to sea in an emergency. I have always urged the advantage of interchangeableness between the services. It was only to-day I had an application from a Captain of a man-of-war to ask me to give him any sort of employment as an Officer. It is deplorable that Naval Officers should be driven to seek what they cannot obtain, and that is, employment in the Mercantile Marine, all because there is a want of harmony between the two. There is an absence of early training and association, which could be well carried out, if the Government would consider what the wants of the Mercantile Marine are, and reconcile them with the requirements of the Naval Service. Then there is the question of telegraphs. Before the Suez Canal shares were bought, I told the Government that in the next war, which would be in all probability in the East, there would be the great difficulty that the Suez Canal could be shut up in a very few hours by any Officer of enterprise and skill at the very moment the English fleet might be seeking to pass through, with stores or preparations for some naval or military operation. I pointed out that there were three lines of telegraph to India and China, and that it was proposed to establish a line of telegraph to the South African colonies by way of these established lines round to Zanzibar, and thence by Natal. I showed the Government that at that moment there was only one line of these three open, and that through Russian territory—the Indo-European line. I suggested that the wisest way would be to have an alternative line by the western side of Africa, and that it should connect our naval stations on the South Atlantic. No time should be lost, for in time of peace it is well to be prepared for war. We would be able to telegraph to the Gold Coast, with St. Helena, Ascension, the Cape, and Natal, and, indeed, I would add the Mauritius. The result would be that at any moment your men-of-war at the Gold Coast, or at the Cape station, or at St. Helena, or the Flying Squadron, could be called together suddenly; or by a connection with Brazil, the Pacific, and the West Indies, our squadrons there could be brought into play.

If anything should occur in the East at the present moment involving maritime action on our part, it is quite clear we have no arrangements for carrying troops round the Cape of Good Hope, no graving docks to put men-of-war into, no means of telegraphic communication. In the case of the Ashantee war, a cable was sent out, which did not arrive in time. But the Officer in charge took twenty miles of cable in his trunk when sailing with the troops, and had this laid down. No more was laid, but what had been laid was of service; for when the King of Ashantee sent his message to Sir Garnet Wolseley, our General was able to send it forward to the coast from the Adamsi Hills, part of the way by that wire, the other part by runners on foot. The whole telegraph if it had been laid would have been of service. Many such illustrations might be given to show how we have failed in our arrangements in moments of emergency, and that the great thing is to be prepared for anything.

Lieutenant GRENFELL, R.N.: It may be of interest to state that an effort is being made to revert to the use of cast iron for armour-plates. In the early days of armour-plating, cast iron, as we all know, was tried, but was found so defective that its use was abandoned for that of wrought iron.

The plates to which I refer, are cast in chill, and are consequently intensely hard on the surface, whilst the iron is so selected and combined that the plates have an extraordinary degree of general tenacity and strength, qualities which have hitherto been absent from the use of cast iron for these purposes.

When opposed to a gun superior to our 25-ton gun, hardly any impression was made on the plates at all, a result which seems remarkable.

I do not say that the problem is as yet altogether solved, but should the trials lead to success, the use of cast-iron for armour presents many advantages. It is much cheaper than wrought iron. The varying curves of the ship's side can be at once given. Its extreme hardness and local strength would be most efficacious in resisting the action of torpedoes, if armour is applied, as Captain Scott suggests, to the bottoms of ships, whilst it permits for turrets the use of the dome-shaped or cupola form, which, as every artillerist knows, possesses so many merits from a defensive point of view.

It would also be possible to dispense with those sharp angles at the armour-shelf to which Captain Scott referred, which you see in the overhang of the "Tegethoff"

(diagram). In many other instances it seems to offer great advantages, and may possibly open up an entirely new field for the use of armour.

Admiral SELWYN: There are one or two observations I should like to make from the point of view of the men who fight the ships. Captain Scott considers that unsinkability is to be first desideratum; second, ramming powers; third, gun and torpedo powers; fourth, armour-protection; fifth, speed, with coal capacity or steam power. I want to suggest to him (with all due deference to his superior knowledge of the subject) that a vessel's speed is the one thing which every naval Officer wants. If his ship is fast, he will care very little what else she is, because he feels distinctly that that gives him the power to carry whatever offensive or defensive capacities he may have, most quickly to the scene of action. That fatal word "too late" renders nugatory the very best armour and the most perfect powers of every description; and we must remember that "too late" to-day, has even more importance than it had in former wars. Therefore, I say speed is the first condition. That a ram can be carried with nothing else on board, and be made to produce magnificent effects, no one who recollects the arguments used by Admiral Sartorius, or the illustrations his arguments have since received, can doubt for a single instant: we have had too many fatal experiences of its power to doubt that it is so. Then it is clear that if you only have speed and the ram, you have a powerful offensive weapon. Therefore, I put speed first. I give the second value to unsinkability, because to carry about offensive weapons, or to retain the power of defending your country, you must at least be able to keep the ship above water. Next I put offensive power, and this may be varied. The ship may carry guns or torpedoes, so as to make her a formidable antagonist, for her ramming power may not be sufficient. The defensive power I put, as I think all English seamen will join me in putting it, at the very lowest of all our considerations. If you keep a ship above water and leave her some offensive power, seamen will not ask to be kept entirely from the effects of shot or shell. We do not expect it, for we know we cannot get it. I think the first requirement, speed, is to be obtained primarily by studying the results of such experiments as those carried on by Mr. Froude, and by carrying them at once into practice. As fast as Mr. Froude turns out an accepted fact, let us try it. Do not let us wait until he has carried out, some years hence, the most elaborate of his experiments, and then find that we have built at a very large cost, vessels to which his finished experiments point as being wretched blunders. Then the duration of speed. This must be a question of fuel, and, as I heard from Mr. Barnaby on the last occasion I saw him here, that he thought I had abandoned the question of condensed fuel, I beg to say that is so far from being the case that I am still exerting myself in every direction to obtain due consideration for what I still consider the most important question of the whole, for the Navy; that is the power of carrying a large supply of fuel to sea. I am perfectly convinced by all those experiments which I made that there is no difficulty whatever in obtaining three times the amount of power from one pound of condensed fuel than now can be got from the best coal, and that there is a probability that a careful consideration of the chemical effects derived from burning steam in the presence of carbon will show a possibility of raising that to six times. That *has* been done in a large boiler, and I think it can be done again. Therefore, fuel can be made more lasting by being condensed first, and scientifically used afterwards, and speed can be made lasting also. But it would be ridiculous to attempt to give us improved fuel, if at the same time, thorough and careful attention is not given to the form of boiler in which we use it. That is one of the greatest defects in our modern steam-ships. The boiler is simply an absurdity from beginning to end. We attempt to burn fuel in a chamber whose walls are surrounded with hot water, and as we can never keep up the proper temperature of combustion round that fuel, we always get smoke. The cellular construction, I quite agree, carried out to the utmost limit, and accompanied with wise stowage, will give us all we can hope to have in unsinkability. I think the resistance to under-water shot, which is part of the question of unsinkability, may be obtained by carrying more armour under water and less above. I think it may also be wisely considered whether that armour ought always to be carried outside the ship, whether it is not a wrong idea, and particularly if you get chilled cast iron to resist chilled shot, whether that could not be usefully employed in the structure of the ship, whether the armour ought not to be part and

parcel of the structure of the ship, whether you cannot carry that armour inside, so as to require less area than it does now outside. It could also be used in another way. All seamen know the value of bringing up ballast in giving great stability, great steadiness, and easiness at sea, and if ballast, instead of being put in to remove what Mr. Scott Russell calls wretched blunders, in one lump at the bottom of the ship—a practice of which Captain Scott has very ably shown the great disadvantage—if we disposed it properly we ought to get more value out of it than that of being simply ballast. As regards enlarging the chamber of the gun, I think the question is hanging back very much more than it need. I cannot see any particular reason why we should wait for an 81-ton gun in order to discover the effects of enlarged chambers, or why we cannot do that quite as well with any other sized gun, and why we cannot experiment with powder, which I regard as one of the important questions, still more than we do. We have got to a state in which there are different kinds of powder for every particular gun; from the Martini-Henry up to the 81-ton gun, we have powder of a different nature for each kind of gun. I advocate very strongly indeed a much larger expenditure in wisely conducted experiments. I do not think that these can be fairly and properly committed to any one class of men, or to any one committee. I think all the engineering talent available should be enlisted, in order to solve the various questions, each by those persons most fitted by nature or scientific attainments to consider them. With reference to naval architects and the questions they are asked to solve, I think that would be best done by asking them very frequently to go to sea in their own ships, and if that were done, I think we should no longer hear that there were certain ships built in the Navy which were not intended to succeed. For instance, of the "Waterwitch," the "Vixen," and some others, it is said that they were not intended to succeed. This is an admission which I should have thought would be regarded by any persons who called themselves scientific as fatal entirely to the claim of any scientific knowledge whatever. In common with the other speakers, I have the highest appreciation of the lecture as one of the new developments of Captain Scott's labours. I am quite sure, had he been listened to when long ago he brought forward that remarkable improvement in rifling shot, to which he slightly adverted to-day, that is to say, ribbed, not studded shot, in which the centricity of the axis of the shot was secured by the driving power of the rifling, we should have had much less to lament in the effect of the powder-gases which are supposed to erode the bore; much less to lament in the weakness of our shell; and very much more efficient guns in the point which is the one most to be sought for, namely, the velocity with which the shot is propelled, and the force with which it strikes, since the latter results largely as a consequence of the velocity, instead of which the mass which has just been advocated as the only thing to be increased, gives us, besides other inconveniences, a striking force comparatively but little enhanced.

**THE CHAIRMAN:** I think there is one point we must all agree upon, that is, in conveying our thanks to the lecturer for the very efficient way in which he has treated the subject throughout. We have enjoyed two lessons from Captain Scott, and if it had not been for the lateness of the season, we should like to have had a third. There is material in the lecture certainly for another discussion, and also for a great deal of reflection when we go to our homes. The more we consider it, the more we shall be convinced of its value.

**CAPTAIN SCOTT:** Captain Dawson is mistaken in supposing that I advocate the service 25-ton gun; but it is more powerful, and therefore superior to the 18-ton gun, which is the smallest that will penetrate armour.

There will always be a question as to the relative advantages of a greater or less number of guns, but having a sufficient number of plate-piercing guns, the great thing then is to get accuracy. I believe, as Captain Colomb, Commodore Goodenough, and other like careful observers have shown, that in ordinary firing, our seamen will only *hit* an enemy once out of ten times at a 1,000 yards: but I think, instead of that being the case, we ought only to *miss* once in ten times at a 1,000 yards. I believe that far greater accuracy than has yet been gained, is possible, and *ought* to be attained. Wimbledon has taught us what can be done with the small gun (the rifle), and I am quite sure if we were to take the matter in hand nationally, great results would be attained. I wish to point out with respect to the 38-ton

gun at Shoeburyness, which General Collinson has referred to, that its mean rate of firing, including stoppages, was actually four and a half minutes per round, and taking the average that Captain Colomb has given (see Vol. XV, page 412, *et seq.*), and supposing the 38-ton gun had been mounted on board the "Thunderer," this gun would only have given one hit per hour as the result of the rate of firing at Shoeburyness; so that the four guns, *viz.*, two of 35 tons and two of 38 tons, which comprise her sole armament, would only have hit *once* in a quarter of an hour. I do not think that is a very satisfactory state of things. As to manoeuvring and turning the ship quickly, I have mentioned the turbine, which affords an efficient means for reversing, and also for pumping the ship clear of water. The engine for weighing the anchor could be very easily applied; but I think most of us who have put forward plans, however successful they may have proved, are perfectly contented to let some one else work out the details for doing it. With respect to Major Moncrieff's system, as it has not been adopted into the Naval Service, I did not think it necessary to advert to it, in comparing the relative protection afforded to guns mounted upon the different plans now used on board ship. Speaking generally, four guns on board a ship is not a sufficient armament, for with the "Thunderer's" armament of four 35- and 38-ton guns you might only get one hit in every quarter of an hour. The 81-ton gun cannot be so accurate at sea as the 35-ton gun, and hence, judging according to our present knowledge, a ship firing four 81-ton guns will only hit another every half-hour. The graving-docks and telegraph lines that Mr. Donald Currie adverted to, no doubt ought to be provided for and proceeded with at once, for it is most important that we should have these *ready before war* breaks out. Supposing you took one of the vessels shown here, the "Alexandra," with an enormously heavy mass of armoured superstructure, into action, would she not require a graving-dock after the action? It is better to speak out plainly if a real need exists, because it will be met, and then we can be prepared for eventualities; but I fear that without docks to repair her battered sides, the "Alexandra" and other heavily weighted ships would follow to where the "Vanguard" now lies, *viz.*, the bottom of the ocean. With respect to gun-boats, I will only say, as was vainly said prior to the breaking out of the Crimean war, that by utilizing such vessels as we may have at the moment, and mounting light guns in them, we might at once attain to a considerable amount of efficiency; but in the war referred to, we lost our opportunity, and built gun-boats which were too late to be of use. With respect to casting armour-plates and chilling them on the surface, I fear we shall not be able to use cast iron armour for this simple reason, that weight is a very important consideration, and you cannot get the same strength in cast iron that you can in steel. What we want is the best, and the strongest, and the toughest material, and I do not think that cast iron will give us this material. The only other point I need refer to, and really I am very sorry to refer to it, is the efficiency of our war crews as compared with that of other nations. If we take the fighting crew of such a vessel as the "Vanguard," with a complement of 461 men, we shall find that only about 200 are really drilled sailors, 100 are undrilled, and the remainder are either boys or non-combatants. Now, a 1-rush ironclad with 461 men will only have 23 non-combatants and no boys, so that she would have 438 men thoroughly well drilled. We should not allow that disparity to continue, but take steps to raise our war crews to a more thorough degree of efficiency.

I think I have answered all the points that have been put forward, except as to whether experimental firing with various guns has been carried out. The simple fact is that no such trials have been made, and the studded shot of the present time cannot safely stand the velocity which can be given by a battering charge. If the powder chamber were to be increased, the studs and wads used would break up the projectiles, and were these tried against armour-plates, I believe the defects of our present service system of ordnance would be apparent.

## LECTURE.

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Friday, June 23rd, 1876.

ADMIRAL SIR HENRY J. CODRINGTON, K.C.B., Chairman of the Council, in the Chair.

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### THE MERCANTILE MARINE CONSIDERED AS AN AUXILIARY TO THE ROYAL NAVY.

By T. BRASSEY, Esq., M.P.

Mr. BRASSEY: I have been honoured with an invitation from the Council of this Institution to address the members on more than one occasion before to-day. Having previously written a long paper, with reference to the *personnel* of the merchant service, and its actual condition so far as it would be appreciated by an analysis of the Parliamentary literature on the subject, I feel that it is not necessary for me now to do more than give a short statement of the strength of the merchant service in regard to the ships. Of course the review of the situation in regard to the merchant steamers is exceedingly incomplete, unless those vessels are considered from a naval architect's point of view, and also from a naval Officer's point of view. Now I am not in a position to state to this meeting, as my friend Mr. Barnaby could, if he were not bound by official reticence, what the value of these vessels would be with regard to the power of carrying guns, and still less am I able to treat the subject from a naval Officer's point of view, and to indicate to the meeting the kind of armament which would be most suitable for vessels of the kind which we have to take into our review.

When I was asked by the Council to prepare a short paper on this subject it was suggested, and I was very thankful for the suggestion, that the preparation should be a joint labour to be undertaken by Captain Wilson and your humble servant. The difficulty was to know how the twin brothers were to work, and I suggested to Captain Wilson that he should undertake, if he were disposed to do so, a consideration of the best mode of providing the armament for these vessels, while I would undertake to examine the Parliamentary documents, and to ascertain the number of the vessels, and some of their qualities with reference to their speed. From various circumstances with which I am not acquainted, Captain Wilson has not yet set forth upon his part of the task, and I can only hope that he will be kind enough to follow up this short statement which I am now about to read with reference to the number of steamers that we possess, by considering, as only a naval Officer can, how it would be most expedient that they should be armed for the purposes of war. With these few words of explanation I proceed to read to you the paper which I have prepared.

It is proposed in the present paper to give a brief review of the resources we possess in our merchant navy for home defence, and for the protection of our commerce. Some may think that we are so secure, that preparation for the emergency of war is superfluous. We ought not, however, to be over-confident, for, as Lord Palmerston wisely said, "to imagine that we are safe from invasion now, without precautions, "because hitherto we have prevented it by precautions, is the greatest "of all possible absurdities."

The steam tonnage of the British Empire, according to the latest returns, is 1,825,000 tons; that of the United States, for over-sea foreign trade, 193,000 tons. France has 516 steamers, of 188,000 tons, and Norway has 199 steamers, of 39,000 tons. Our larger vessels are at least as well adapted for conversion into cruisers for the protection of commerce as the trading steamers of other nations are adapted for conversion into privateers. Our merchant navy list includes the following:—

Tons register.	Number of Steam-ships.
3,000 tons, and above .....	8
2,500 " to 3,000 tons .....	24
2,000 " " 2,500 " .....	55
1,500 " " 2,000 " .....	165
1,200 " " 1,500 " .....	167
Total 419	

It may be presumed that all these ships could carry at least two armour-piercing guns, and in addition, a considerable armament of the 64-pounder gun, which, at the present time, seems to be the favourite weapon in the Navy for vessels not intended to engage ironclads.

I may perhaps here venture to interpose an observation upon the much-debated question of armament. Many naval men are of opinion that armour-piercing guns should be mounted in every vessel in the service. They think that there is safety in numbers; and that, however hopeless it may seem for a small unarmoured vessel to engage a heavy ironclad, circumstances may arise in which a flotilla of small vessels, armed with powerful guns, might inflict fatal injury even on an ironclad. It is to be remembered that the large vessel carries very few guns, and that our most powerful naval artillery has become so ponderous, and the range of view so limited, since the introduction of armour, that perfect accuracy of aim cannot be relied upon, especially should the fire be directed against a small gunboat moving rapidly on an irregular course. Hence a large vessel in narrow waters might suffer most seriously from a combined attack by a flotilla of gunboats of the "Coquette" class, or a squadron of cruisers of the "Opal" type. It would seem desirable, therefore, to introduce a mixed armament, at least in some of the vessels, which are now armed exclusively with the 64-pounder gun.

To return to the merchant navy, it would be a statesmanlike measure on the part of the Admiralty to enter into communication with the owners of ocean steamers, and to endeavour to agree upon terms for the hire of such vessels, in the event of war. As it has been thought expedient to engage a certain number of the merchant seamen to serve in the Navy, by giving them an annual retainer during peace; so it might be worth while to subsidize the owners of steamers, adapted to carry an armament, in consideration of their undertaking to hold their ships at the disposal of the Government in the event of war. No less than 640 steamers were hired by the Government of the

United States during the civil war, and without these vessels it would have been absolutely impossible to have blockaded the coast of the Southern Confederacy.

What occurs to me as important in carrying out this suggestion is this, that it being admitted that by far the greater number of merchant steamers being, when built solely for mercantile purposes, very imperfectly adapted to any service of war, it would probably be an expedient course for the Government to endeavour to enter into communication with shipowners at a time when they were contemplating building new vessels, so that there might be introduced in the original design those necessary modifications which would enable the ships to carry guns. No doubt shipowners would say, "These things do not advance our interests in the least; we "look simply to carrying passengers and cargo, and we are not prepared to alter our "designs." To that, of course, the ready answer is, it is a mere question of expense, and if the Government be prepared to pay the expense for these modifications, and if the vessel be not injured by them for commercial purposes, I take it there would be no objection on the part of many merchants to do it, especially if the Government were prepared to pay a sufficient sum by way of retainer, enabling them to make use of these vessels for a stipulated amount in case of war. Of course such a suggestion means expense, but it may be better that the public money should be spent in that way; for I take it for a given sum of money you would have a very much larger number of vessels at your disposal, than if you built vessels expressly and solely for the purpose of war; and whereas an unarmoured vessel may be utilised as a merchant vessel in time of peace, it is quite certain that no ironclad can be utilised for that purpose. The question therefore is, whether it is not desirable to spend as large a sum available for ship-building as possible upon vessels which are exclusively of the fighting class, and to endeavour to supplement the fighting class by subsidiary vessels to be partly engaged in time of peace in the merchant service. Of course these things present themselves to everybody in the House of Commons from a financial point of view; perhaps they do not strike naval Officers in the same way; but what we have to consider is that the sum available for ship-building is not an unlimited quantity. There is only so much money available. You may have to increase the estimates; we have increased the estimates; we are increasing the estimates; and I dare say we shall increase them still more; but even assuming that we are to proceed in the direction of further expenditure, still after all the sum of money is limited, and no one knows it and feels it more keenly than those who, like Mr. Barnaby, have to rack their brains year after year in order to produce the greatest amount of force for the money placed at their disposal. Therefore it is worthy of consideration, whether you cannot provide your unarmoured fleet in part by some alliance and partnership with the merchant service.

All naval Officers are agreed in attaching more or less importance to the quality of speed in unarmoured vessels. The "Inconstant" was built specially with the view to attain an unprecedented speed. Now in point of speed, and in coal-carrying capacity, the fine steamers employed in the North Atlantic trade, present very remarkable elements of power. In his exhaustive work, Mr. Lindsay has published details, giving the average passages of the principal lines of ocean steamers between Liverpool and New York. The speed and regularity maintained are truly marvellous. I give a few figures, extracted from Mr. Lindsay's tables, which will serve to show what an immense reserve of power we possess in our merchant navy for the emergency of war.

The distance from Queenstown to Sandy Hook is 2,777 miles, and it was performed in the years 1873 and 1874, outwards and home-wards, by the steamers of the White Star, Cunard, and Inman lines, at the average speed shown in the following table:—

Line.	Outwards.						Homewards.					
	1873.			1874.			1873.			1874.		
	Sailings,	Average time.	Sailings,	Sailings,	Average time.	Sailings,	Sailings,	Average time.	Sailings,	Average time.	Sailings,	Average time.
	Days.	Hours.	Mins.	Days.	Hours.	Mins.	Days.	Hours.	Mins.	Days.	Hours.	Mins.
White Star .....	47	9	19	48	50	9	22	53	47	8	22	39
Cunard .....	52	10	16	51	52	10	16	51	53	9	7	59
Inman .....	59	10	22	4	51	10	22	1	52	10	0	3

In each year there were a few voyages of exceptional duration:—

Time.	Outwards.						Homewards.					
	White Star.			Cunard.			Inman.			Inman.		
	1873.	1874.	1873.	1874.	1873.	1874.	1873.	1874.	1873.	1874.	1873.	1874.
Over 12 days .....	2	2	4	6	4	7	0	0	0	0	2	0
" 13 " .....	0	0	2	0	1	3	0	0	0	0	0	0
" 14 " .....	0	2	2	1	6	4	0	0	0	0	1	0

As an example of the marvellous perfection to which ocean steaming has been brought by the enterprise of British shipowners, unaided by subsidies from the Government, the recent performances may be cited of the "City of Berlin":—

*Log of the Inman steamer "City of Berlin."*

Queenstown to Sandy Hook.				Sandy Hook to Queenstown.			
Days.	Hours.	Minutes.		Days.	Hours.	Minutes.	
7	18	2		7	15	28	
Date.				Date.			
1875.				1875.			
Sept. 18 ....	303	miles.		Oct. 3 .....	388	miles.	
" 19 ....	367	"		" 4 .....	362	"	
" 20 ....	376	"		" 5 .....	366	"	
" 21 ....	368	"		" 6 .....	361	"	
" 22 ....	380	"		" 7 .....	381	"	
" 23 ....	324	"		" 8 .....	347 <sup>1</sup>	"	
" 24 ....	381	"		" 9 .....	362	"	
" 25 ....	380	"		" 10 .....	253	"	

<sup>1</sup> Fresh gale and heavy beam sea.

The performances of the White Star line have been equally remarkable for the extraordinary speed attained. In 1873 the *Adriatic*, sailing west, made the voyage from Queenstown to Sandy Hook at the average speed of 18·55 statute miles per hour; and in March, 1872, the same ship made the passage, sailing east, at the rate of 18·9 miles per hour. The regularity of this vessel's passage is not less remarkable than the speed, the average time for twenty-nine voyages from New York to Queenstown being 8 days 10 hours 57 minutes.

The shortest passage was in October, 1874, occupying only 7 days 23 hours 12 minutes. This passage was surpassed, by a few minutes only, by the "Germanic," which made the run from Queenstown to Sandy Hook, in August, 1873, in 7 days 23 hours 7 minutes. The greatest run in a single day, recorded by Mr. Lindsay, was made by the "Adriatic," on the 10th April, 1873, on which day she steamed 396 miles, the course being S. 61° W., with the wind N., force 6.

These particulars will have sufficiently shown what the large steamers of our Merchant Service can do. We are equally strong in the means of coast defence. The flotilla of steamers in our home-trade includes 5,530 vessels under 50 tons, 4,173 over 50 and under 100 tons, and 1,670 steamers over 100 and under 200 tons. If these 11,373 steamers were all equipped with Harvey's towing torpedo, and if, in addition, all those of sufficient strength were armed with one or two guns, no hostile fleet could approach our shores with impunity.

The torpedo has given a ready means of converting the smallest steamer into a formidable vessel of war. Torpedoes should be kept in store in all our great commercial ports. The captains of tugs and other suitable vessels should be formed into a Marine Torpedo Corps.

They should be thoroughly drilled in the use of the weapon by experienced officers, and their services should be secured by a retainer or pension.

A report was made to the Admiralty some years ago as to the adaptability of the tug and ferry-boats of the port of Liverpool for conversion into gunboats. A large number were found to be capable of carrying the heaviest gun at that time mounted on board ship. The 81-ton gun has since been constructed. A weapon so formidable can only be carried in a vessel of special construction and of large tonnage. The torpedo, however, has to a considerable extent neutralized the increased power of the gun, and has furnished us with the means of arming with a powerful weapon, every swift and handy steamer for coast defence. By the use of the torpedo and submarine mine, the narrow, shoal, and tortuous channels of approach to London, Liverpool, Hull, Glasgow, Cork, Bristol, and Cardiff—in short, all the busiest sea-ports—may be closed to the most formidable ironclads.

Though the subject is more interesting to a naval Officer than to a naval architect, I cannot omit from the catalogue of ships required for the Navy, a certain number of sailing vessels, to be attached to the receiving ships at Devonport, Portsmouth, and Sheerness, for the purpose of taking the seamen to cruise in the Channel in summer, and to Lisbon and Gibraltar in winter. Such vessels become more and more necessary for training purposes at a time when it seems probable that the fighting navy will be largely composed of mastless ironclads.

Having elsewhere shown the great superiority of our armoured fleet, I may here, in conclusion, advert to the relative condition of the Navy in unarmoured vessels. The Americans have only 39 unarmoured cruisers, and very few of these have a speed of 10 knots, a considerable number being unable to steam more than 7 knots an hour.

Probably gallant gentlemen in this room have had in their hands Admiral Porter's Annual Reports upon the condition of the United States Navy, and those who have read those publications must be aware of his great disappointment at the want of speed which characterises the unarmoured vessels which are placed at his disposal by a legislature which is even more narrow-minded than the British.

The Russians have but few unarmoured cruisers, and their entire fleet in the Baltic and Black Seas only carries 271 guns. The Germans have only 11 corvettes and 4 despatch boats, carrying altogether 145 guns. The Turks are practically without a cruising squadron.

I say that with deference to those who know more about these things than I do; but to the best of my belief the Turks do not possess any unarmoured cruisers of a kind which we should view with satisfaction if they belonged to our own service. Gallant gentlemen must appreciate the very different view we take of ships when they fight under the British flag and when they fight under a foreign flag. We are certainly more critical with our own ships than with foreign ships. That perhaps is quite right.

When, therefore, we compare our own position with that of other Powers, and when we find that the ships included in the return of vessels building in 1875, will carry no less than 304 guns, of a calibre on the whole incomparably heavier than that of the artillery mounted in the unarmoured ships of other Powers, it must be clear that our situation,

both in the present and in prospective, can give no just grounds for anxiety to the most susceptible and timid mind. The superiority of our resources will not, however, give us any proportionate advantage without complete and careful organization.

I most sincerely hope that the attention which this Institution is pleased to direct to these subjects may have the effect of promoting arrangements of the kind which I venture to indicate between the Admiralty and the merchant service. I believe that in our merchant steam navy we now possess what might, with a certain amount of trouble and expense, be converted into a valuable auxiliary; but if we were to take this question in hand in a masterly, effective, and liberal spirit, I believe that what we possess now is as nothing to what we might have hereafter. I trust the subject will be taken up perhaps by Captain Scott, or some other gallant gentleman, and worked out in a lecture to be delivered in this Institution at no very distant date. The *personnel* of the merchant service I have already ventured to discuss in a lecture delivered here in February, and the organization of that *personnel* as a reserve has also been treated, no doubt very imperfectly, by me, and much more satisfactorily by others in former lectures delivered in this Institution, and I believe that our labours have borne fruit. Anyhow, the Naval Reserve has been immensely strengthened in the last few years. I wish we could go further in that direction. I wish that every able-bodied seaman in the merchant service could be induced to register his name on the Reserve lists of the Navy. If that were done, if we had our seafaring population as much at the command of the country in an emergency as the seafaring population of France is, of course we should be, in even a greater sense than we are now, the dominant maritime power of the world. In order to accomplish that, you must have either compulsion or expenditure. We cannot have compulsion, and I think we have now sufficient expenditure. I think we give enough to the Naval Reserve individually. Therefore, the great question is to consider whether there are prejudices still lying more or less dormant in the minds of the seafaring people which tend to keep them out of the Navy. I was talking upon this subject only a few days ago with Captain Furnell, the Superintendent of Green's Sailors' Home, now very large shipping offices, and he told me that there still is an amount of stupid prejudice which keeps a great number of sailors from joining the Naval Reserve. He says that their wives object to it. The wives, I am happy to say, have great influence in that, as they ought to have in every class of society, and they think that this Naval Reserve means fighting, and interruption to domestic happiness, and their influence is strongly exerted in a sense adverse to the Naval Reserve. Well, I hope that may be overcome. The fighting will only be for their hearths and homes; and if their husbands did not go forth on the supreme emergency it would be very awkward for the wives, and I hope that may be appreciated. I have nothing more to say, and I thank you very much for your patient hearing.

The CHAIRMAN: The subject is a most interesting one to us, and I hope there are gentlemen present who will kindly favour us with their opinions not only on the constructive part but also on the part relating to the *personnel* of the mercantile marine.

Commander W. DAWSON, R.N.: It is a very important question whether in a national emergency this country cannot have the benefit of the services of some 4,000 or 5,000 splendid steam-ships, and whether no means can be devised for converting these steam-ships into valuable auxiliary engines of war for the defence of the country. You, Mr. Chairman, may remember better than I do, how about a quarter of a century ago a Committee of Naval Officers was appointed to consider the armament of merchant steam-ships. In those days we had not the mechanical means of mounting guns which Captain Scott has now provided us with, and it was decided that it would require a good deal of strengthening to the decks and beams of these ships in order to make them fit to mount and work even the 32-pounders of that day; but I take it there would be no difficulty in the present state of mechanical science in mounting, say 64-pounders, in most of the sea-going steam-ships of the Merchant Navy. It is true that it is a question of expense, but we are speaking of an occasion of a maritime struggle for national existence, and then expense must be

thrown to the winds. It would not then be a question of 10,000,000*l.* or 11,000,000*l.* for the Naval Estimates, but of saving the country. It is, therefore, a question that ought to be taken into serious consideration now, in the piping time of peace, in order that it may not only be done economically, but efficiently, and rapidly, when the time of trial comes. It would be well if the Government could experiment a little on merchant vessels of different classes, in order to give naval architects and naval artillerists an opportunity of discovering what is the best and cheapest way of strengthening these ships, and what armaments they could most conveniently carry. For my own part, I see no difficulty in the way of strengthening any sea-going merchant ships by internal girders and cradle work, so that she shall carry any sized gun. But no very extreme weight of ordnance is required. What is required is this, that merchant vessels may be made capable of carrying an ordinary gun; that their bows may be fortified for ramming, and that provision may be made for the use of various kinds of offensive torpedoes, so that when called upon, they may be able to fight vessels of somewhat the same class. So far I quite agree with those who are of opinion that auxiliary unarmoured vessels converted from the merchant navy need not carry guns capable of piercing thickly armoured ships. But there is a class of unarmoured vessels beyond these, auxiliary merchant ships—unarmoured men-of-war for attacking forts and for other purposes, and the armament of those vessels is a disputed point. I am one in favour of the mixed armament which Mr. Brassey has put forward, but he has not quite brought forward my argument, which is this:—An English ship-of-war cannot always be the strongest in fight; she cannot always be the fastest on the seas, and she may be driven into such a corner that she cannot run away, and must either strike her flag or fight a far superior force. Her guns ought to be capable of perforating that superior force, whatever thickness the sides of the enemy's ships may be. If her guns are not capable of perforating the enemy, she is perfectly helpless, and I do not think it is fair to send men in command of unarmoured vessels, armed with weak hitting guns, out to China or the Pacific, where they may be compelled to encounter iron-clads. Let the guns be so powerful that the English ships-of-war, of whatever size, can pierce the hostile side, and then English Captains need not be frightened because they cannot run away from a Japanese, a Peruvian, or a Turkish ironclad. This is why I am strongly in favour of mixed armaments for the smaller class of ships-of-war. With reference to the auxiliary force of cruising ships, there is no reason why the country should not be able to avail itself of the services of the steam-ships of the Mercantile Marine in case of war if they be provided with guns, torpedoes, and fortified bows; and as to expense, that must be thrown to the winds in a national emergency. As to the question of *personnel*, there were two points raised on the last occasion in the course of the discussion which rather taxed my credulity. One was, that the number of able seamen in our merchant navy who are not foreigners was so small that it would be about an average of one English able seaman per registered ship in the British Mercantile Marine. ("A.B.'s—first-class men?") Yes, I mean A.B.'s. My credulity cannot take that in; but I was relieved a little by another very eminent authority, who told us he had gone into the figures some little time ago, and had found that 12,000 fighting men were quite sufficient for the purpose of manning all the merchant steamers that we had under the British flag for fighting purposes. Well, if we take 4,000 in round numbers as the number of available merchant steamers that might be converted for fighting purposes, that would be three able seamen to a ship. Well, it would depend on how many fighting men were in the enemy's ship, whether those three able seamen would suffice to fight the enemy, unless they acted as Captain Bobadil, and asked the enemy to stand forward three men at a time. But I do protest against the assumption that 12,000 fighting men would go any reasonable way in manning the fighting ships which we could draw from the Mercantile Marine, to say nothing of the ships which we should capture from the enemy. I protest quite as strongly against that assumption as against the idea that there is only one able-bodied seaman to each registered English ship.

The CHAIRMAN: The subject at present is not quite so much the *personnel* as the *materiel* of the mercantile navy.

Commander W. DAWSON, R.N.: I understood you to invite discussion on the

*personnel.* I just wished to allude to those two points in our former discussion, and to say how cordially I agree with what Mr. Brassey put forward in a pamphlet which he published last year, on unarmoured vessels, and to thank him for the labour he has so frequently bestowed in representing the Navy, as he has so nobly done both in the House of Commons and elsewhere.

Rear-Admiral DE HORSEY : I think we are very much indebted to Mr. Brassey now, as we always are when he gives us his valuable information on naval matters, and I feel particularly the importance of the subject he has mentioned to day, the arming of the Merchant Navy ; but I should like to suggest its being done in a different way. Preparing passenger and other merchant ships for carrying guns now in time of peace would lead to very large expenditure, and I think the shipowners would not be satisfied even if they were well paid, for they would say it interfered with their speed and the accommodation for passengers and cargo. I cannot see why the Government should not bring in a bill to empower them in the event of war to take such vessels as they required, at a valuation, as they now take land for public works and for public convenience, as in the case of railways. How much greater would the cause be when it was for the safety of the nation in time of war ! I think that no reasonable shipowner could complain if a fair sum was given him for his ship when she was wanted. With regard to strengthening an ocean steamer to carry guns (I speak with diffidence in the presence of Mr. Barnaby and other naval architects), but I can conceive no difficulty whatever. Their hulls are as well able to carry 100 tons in the shape of a gun as in the shape of cargo. The part that requires strengthening is the deck, and our naval architects are quite able to put any amount of strengthening. I feel confident that they would make no difficulty about that in time of danger. The Chairman said that we were not to talk about the *personnel*, but perhaps I may be allowed to say one word. I think to improve the *personnel* of the Naval Reserve it would be desirable in the first place to improve the Merchant Navy. The men require improving before they are fit for us to take into the Naval Reserve.

Captain BEDFORD PIM, R.N., M.P. : I see a very eminent naval architect present, Mr. Scott Russell, and I should like to ask him to give us the benefit of his opinion upon this point. Mr. Brassey tells us that we have in our Merchant Navy 419 ships of a large size, and that "it may be presumed that all these ships could "carry at least two armour-piercing guns, and in addition a considerable armament "of the 64-pounder gun, which at the present time seems to be the favourite "weapon in the Navy for vessels not intended to engage ironclads." The question I wish to ask Mr. Scott Russell is simply this : all those ships have at least eight times their beam for length ; many of them have ten times their beam for length. Will Mr. Scott Russell tell us whether any one of those ships can carry the armament proposed by Mr. Brassey upon her upper deck without capsizing, and especially after she has got well out of her coals, after, say, five days' run ? For my part I believe that the mere firing the gun, would start every rivet in its neighbourhood. It seems to me that the long, narrow, unhandy steamers we have at the present time are utterly incapable of being used in time of war with heavy guns on the upper deck.

Captain SCOTT : What do you call a heavy gun ?

Captain PIM : A 25-ton gun—the gun named by Mr. Brassey.

Admiral SELWYN : I join most heartily with those speakers who have said that Mr. Brassey's paper is one of the most thoughtful and valuable that we have had in this Institution on the subject. In almost all the conclusions which he draws, I should thoroughly agree. I am particularly able to confirm all that he has said with regard to the value of the great ocean lines running across the Atlantic, since I have been very often across lately, and have seen vessels doing even better work than those of which he has given you the returns. He has got only eight above 3,000 tons. I think that will be subject to the new measurement, which will make a little change in favour of a larger tonnage. Mr. Scott Russell has been for many years practising all sorts of plans to make a difference between the measurement tonnage and the actual carrying capacity, with great success to his firm, but when we are considering such questions as this, that should be eliminated. Their fuel-power is extraordinarily great, and so is their speed, and these are two points on

which we ought to be able to imitate them more nearly in the Navy. They will be of the utmost value in case of war, when we shall be called upon probably to provide for the rapid carrying of troops to our colonial possessions. With regard to their carrying guns, I entirely agree with Admiral de Horsey and others that there would be no real difficulty if you give them the right carriages. The question of weights could be easily disposed of. The weight on deck is nothing in a ship of that size. Captain Pim has forgotten that length gives stability as well as beam. As to the question of subsidy in peace, I think it would be rather a wasteful expenditure, because our most durable steam-lines do not always remain in the same hands, and in some cases the change is very frequent, and we cannot give an owner a subsidy when the ship would pass out of his hands. I would rather give the full value for the ship, as was done in the case of the "Himalaya" in the time of the Crimean war, with good effect. With regard to the torpedo, I quite agree with Mr. Brassey that it is a most admirable weapon, and that even where no guns can be carried, it would be most formidable in the hands of a fast cruiser. Those who dared to follow her, would very often find a torpedo in their path. The question on which I venture slightly to differ from Mr. Brassey is this: the Navy of England has, as its chief purpose, the protection of the commerce. Commerce must be carried on, if we would have the sinews of war equally during war and peace; and we cannot afford to take away the very best ships from that commerce at the moment when we are most pressed for our food and for other things which are essential to the well-being of the nation; and we must recollect that every vessel taken under those circumstances from the Mercantile Marine takes a certain portion from the sinews of war. If we are driven into a corner and overweighted, then it is quite clear that, as with the Volunteers so with the Mercantile Marine, every nerve must be strained to defend the Empire. For that purpose organization and registration ought to take place now. Every inquiry ought to be made during peace, that we may be prepared to take them when the necessity arises. We ought to think that it is wiser to spend treble on the Navy for really efficient vessels during peace than to take from those which would provide the sinews of war when the necessity arises. As regards the personnel, I will only say one word, and that is, I think the money may be expended much more wisely than it is now, and with much better effect, if we only give when the men come back to us, instead of giving constantly.

Mr. BARNABY: I came here to listen to what might be said by Mr. Brassey, and by the gentlemen assembled here, and not for the purpose of saying anything myself. I feel as Mr. Scott Russell does, that I would like to hear all the Naval Officers speak, and I think I may ask to be excused from saying more than one or two words. It is right perhaps that I should say this much, that the difficulty which is felt with regard to the use of merchant ships for fighting purposes is not with reference to the strength of their structure, nor their stability, but with reference to their division into compartments. It will be remembered by everybody here, that as iron came to be used very largely in the Merchant Navy, it was believed that the time was come for giving up that mode of strengthening the Navy in time of war, and the Report of the Committee in 1852 was to the effect that those vessels being unfit for war purposes, the subsidies which had been granted ought to be put an end to. Fresh light and the introduction of better material and better modes of construction, and other weapons than guns, have brought us round to the conviction that iron ships built for mercantile purposes may be armed and used certainly for their own defence in time of war, and possibly also as auxiliary to the Royal Navy: but I would point out again that the one difficulty that has to be overcome is, that the merchant ships which are being built, and some of the grandest among them as to speed, coal-carrying power, and sea-going qualities, are deficient in what we consider ought to be a necessary provision for security against foundering in the event of any one of their compartments being damaged. What the arrangement with the owners should be is a question which is undergoing the consideration of the Admiralty, and you will excuse my saying anything further upon it.

Mr. SCOTT RUSSELL, F.R.S.: Sir, if no more sailors will do us poor shipbuilders the honour of confiding to us their views on this subject, I will give you mine. I will use Mr. Brassey's words: "The superiority of our resources will not give us any proportionate advantage without complete and careful organization." And what

does organization mean? It means what Lord Palmerston said, arranging for war long beforehand, during peace. Now, if you ask me whether suddenly and abruptly, and all at once, on a demand from the Admiralty, we would undertake to select for them vessels which would be good, sound, safe vessels, capable of being armed even with the most ordinary guns, and engaging with anything like fair security in war, I say we could not take that responsibility; we won't take that responsibility. Therefore, I hope Mr. Brassey's paper will be received with the greatest possible weight attached to its last sentence, and that you will believe that the great mass of those ships which he has quoted, are not at all to be relied on for war purposes. Now, I wish I could say that we English are in a condition to defy everybody; that we are stronger than all the rest of the world put together. Gentlemen, I should be a traitor to you if I said so, because I should lead you to trust to a broken reed. Those vessels which Mr. Brassey has so eulogised, are vessels which with a very slight blow from a rock, or a rocket, or any of those ingenious weapons which we see exhibited in this place, would certainly go to the bottom. Therefore, I entreat you to place no faith in them. I do entreat you, on the other hand, to place faith in vessels which Mr. Barnaby and the Admiralty may be building, unarmoured, but with great precautions, trying to make them as safe as possible, and with power to carry certain guns. But as we are all friends and countrymen here, will you allow me to tell you of a terrible blunder you have made? I think about forty years ago I was asked to take the responsibility of building four Royal Mail steam-ships to carry mails for you at the greatest possible rate then known. I built you your ships; they were the fastest of the whole of that fleet; they were quite satisfactory; but what did you do at that time? You did this: you made me responsible to you that those ships should be capable of carrying guns, and before you would give the ships their subsidy for carrying the mails, you made them satisfy your Admiralty that they were seaworthy and able to protect their mails against invaders. Why have you dropped that? Can anybody tell me that you still do that? I asked the highest possible authority the other day what he could tell me about that, and he said he had never heard there was any such thing. You are now paying all the money you do for the mail service to magnificent fleets of ships without ever once asking whether those original arrangements have been adhered to, and whether the vessels are fit to be trusted in time of war. Now, I ask you Members of Parliament, what representatives are you of the public interest if you have allowed that sort of thing to go on? And now you come and read your papers! Why, if you had looked into the accounts of which you boast so much, if you had looked into the votes a little bit, you would have found that all that money that was paid to those companies on those conditions, has not been earned. Now, I think you will agree with me that there are funds at the disposal of the nation for this honest national purpose, and following up what Mr. Barnaby has said, I will do what I have always promised I would when you sailors put me a difficult question,—I will give you a straightforward, open answer. You tell me that you want merchant ships to be ready for your purposes in time of war. You have only to let that generally be known; you have only to tell all the ship-owners that you will give a preference to ships which have those qualities which you require; you have only to say that all your mail contracts shall include that condition which I have referred to; you have only to organize and arrange beforehand, and you will find one day that you can use all your Merchant Navy for war purposes, for it is not difficult to make them so. You have only to have a wise proportion of beam and depth; you have only to get a wise position for that beautiful element in our modern ships, which so many of you forget, the ballast! We have got ballast now without paying for it; we have got the most magnificent arrangement of ballast in our engines and boilers. If you put them in a foolish place, you make an unseaworthy ship; but if you put them in the right place, I become responsible to you that you can carry a large deck armament of those delightful 8-inch guns which we have been talking of. But if you do not do all this beforehand; if the Admiralty do not see that they are of the right proportions; and if the Post Office do not see that these things are carried out before they pay the quarterly dividends for carrying the mails, then they will never get them. Another thing you can perfectly well do to benefit the public, and the sea-faring population: you can make it a sin by Act of Parliament to send a large merchant steam-ship to

sea which was not practically unsinkable. You say that is nonsense ; I say it is not nonsense, because my "Great Eastern" steam-ship, by the skill of a clever captain, who found out a rock in quite an out-of-the-way place, had a hole torn in the hull 83 feet long and 9 feet 10 inches wide in the centre, and with this hole in her bottom she went to the end of her journey. They tried to cobble it, and could not ; and with this hole she came back from her journey. She carried all her passengers and cargo safe and dry to one end of the journey, and brought an entirely new set of passengers and cargo safe and dry to the other end. That she did, too, without being surveyed by the Admiralty, and without being chartered as a mail ship. Now, I ask you, am I wrong in saying that if you will put the problem to us ship-builders, we know how to accomplish it ? I think I know, and I think Mr. Barnaby does, how to make a respectable sea-going steam-ship, unsinkable by all the ordinary means ; and I think he knows how to put on board such a ship a very large armament of guns, which may not be capable of encountering and sinking a fully armoured ship, but which will be capable of sinking a great many cruisers and privateers, and doing harm to a great many troublesome customers. Will you allow me to say one word as to how I should set about it in our private ships. I should like to have my unsinkable ships ; I should like to have the ballast in the right place, which would be pretty low under the water ; I should like to have my guns in the right place, and of a big diameter. I do not want to have them very heavy, because I do not want to be far away from the enemy ; I want to come close to him. Give me big shell, big shot, and big bore ; then with my fleet of twenty merchant ships I would surround this grand fellow with his 81-ton guns. I would pepper him, and if he sent one of his 81-ton shots through me here and there, I should not mind ; if half-a-dozen of us sank it would not matter ; if we sank him we should win the victory. Therefore, I entreat you not to arm those sinkable, incapable ships which Mr. Brassey has spoken of, with any hope of doing good, but return to your old ways as quickly as possible, and say that any person who desires the Government money, must, in some way or other, put his ships into a condition to be fit to serve for purposes of defence in time of war against all vessels of his own class, whether they are called privateers or anything else.

Mr. BRASSEY : I am sorry that I am obliged to leave this room, but I trust it will not cause the discussion to terminate if any gentleman is anxious to address you. I am sure I appreciate very much, as I always do, the kind reception I meet with in this theatre. With regard to the speech which we have just heard with so much interest and satisfaction, I am quite sure it was a very instructive and stimulating discourse for those Members of Parliament who are present. I see before me three of the least benighted and incapable of your neighbours at St. Stephens, and I am sure we shall go back to our labours refreshed and encouraged by Mr. Scott Russell's speech. Feeling as I do from what he said, that the idea of utilising the merchant steamers is feasible if properly carried out, I certainly, along with others, will watch carefully the next arrangements that are made with regard to the contracts for carrying mails, and will not allow the opportunity to pass by neglected of introducing afresh into those agreements the beneficial arrangements which were formerly made, because I am one among others who take an interest in these subjects without having the professional knowledge which distinguishes Mr. Scott Russell. Therefore, one would not be disposed to press a view upon the House of Commons such as he has propounded, without being satisfied in the first instance by professional advice that it was proper to be entertained by Parliament. But now, after having heard so many able gentlemen assure us, that with comparatively inexpensive modifications introduced at the right time and in the right way, you may make a large number of your merchant steamers valuable for war, I say that when we come to deal with mail contracts again, we must make use of that which is an excellent opportunity of doing what I was proposing, that is, making your arrangements *ab initio*, when the vessel is about to be built. It may be that the same principle may be extended even to vessels which are not to be used for the conveyance of Her Majesty's mails. I am very sorry that I have to leave the room, but I trust it will not cause the discussion to terminate, if gentlemen are pleased to continue it.

On the motion of the CHAIRMAN, a vote of thanks was passed to Mr. Brassey, before leaving the room, for his valuable and suggestive paper.

**Mr. BUTLER-JOHNSTONE, M.P.:** I too, in common with Mr. Scott Russell, was extremely anxious to hear all the naval men speak on this occasion, and I was equally anxious to hear the naval architects, because it is essentially a question for naval architects as well as for naval men. But there is also another aspect of the question which is no less important. In old times there were two descriptions of ships which we sent out in case of war. There were the ships which had to fight the enemy's vessels,—and do what you like with the "Cunard" and "White Star," and other lines, you will never make them equal in fighting strength to a vessel built expressly for that purpose, any more than you can make a carrier pigeon equal in strength to a hawk; but there was another class of vessels sent out, what we used to call specifically "cruisers," to prey upon the enemy's commerce, and to destroy his resources, and so put an end to the war. These fast-sailing clipper steamers are the very things which could, at a very small expense, be admirably adapted for that purpose. But if, as Mr. Scott Russell said, we made a mistake forty years ago relative to the contracts for mail steamers, what a gigantic, what a disastrous mistake we made twenty years ago, when we signed the Declaration of Paris; because even if you send out the cruisers, and cover the ocean with your fast-sailing ships, carrying guns, there will be no commerce to prey upon. Do you suppose any enemy will be foolish enough to come out of his forts and fight your vessels when he can remain in, as the Russians did, and defy you? Nelson's great victories, Howe's great victories, how were they achieved? By putting an absolute embargo upon the enemy's commerce. The enemy came out to protect his commerce, and then you sank his fleet. But now, under the Declaration of Paris, the enemy's commerce will sail under a neutral flag, and there will be nothing for your cruisers to prey upon. You may spare yourselves taking any trouble about these armed vessels, for there will be nothing for them to do. You have plenty of ships of war to defy the enemy, but they will never come out to you; and as long as the Declaration of Paris is unrepealed, there will be no enemy's commerce to prey upon; and all these questions of turning our merchant steamers into ships of war are useless. There will be nothing for them to fight. In my capacity as Member of Parliament, I thought it my duty to put this aspect of the question before you. I have received great profit from the discussion to-day, and shall be only too happy to support Mr. Brassey the next time a mail contract comes before Parliament.

**Captain SCOTT:** Mr. Scott Russell has given us a view of the future, but what we want is a correct knowledge of the present requirements. Of course you may find fault with the strength of merchant ships, but the point is to utilise them for what they are fit, and doubtless this very foundation force *can* be largely utilised. As Mr. Brassey has just left this theatre, I can freely refer to the great good he has done, in stirring up the authorities to inquire whether our merchant steamers can or cannot carry guns. This question, and also the question as to the best use which can be made of the merchant navy during war, ought long ago to have been settled. At the commencement of the Crimean war, just before the sailing of Admiral Napier for the Baltic, when I had just returned from a special mission with the masters and pilots intended for his fleet, I put before the First Lord the suggestion of Mr. J. Bodie and the other masters, *viz.*, the effect it would have, if all the powerful steam-tugs were to be immediately taken up, armed, and sent off at once to Cronstadt to threaten St. Petersburg. Look at the moral force we should have exerted by their early presence. The First Lord, however, sent for me the following day, and said he had been considering the matter, and would build some vessels, as was accordingly done, but they were built too late to take part in the war.

**Mr. GREAVES, M.M.:** Mr. Chairman, with your permission I should like to make a few remarks on this subject. In the year 1841, when the Royal Mail Company first started, I had the honour of being one of its servants, and very well recollect that every one of the Royal Mail Company's vessels was bound by the terms of their charter of incorporation and contract, to be built of sufficient strength to be able to carry an armament in the event of war. Of late years that idea has been abandoned, and if you were now to go to any of these mail companies and make a proposition to them to build henceforward only such vessels as would be approved of by the Government for the purpose of warfare, I do not suppose that they would listen to you for a moment. Since that time we have become a remarkably practical

people. Merchants and shipowning companies have now another gospel than that which prevails among the Navy and Army, who are brought up to regard warfare as their natural field of industry. Outside of the Navy and Army, there is a new gospel—"to buy in the cheapest market and sell in the dearest." Now, if such a proposition was made to the directors of these companies, they will say: "What are we going to do with the eighty ships, more or less, we have on our books? "What would our shareholders say to us? " We were incorporated under a Royal charter for a specific purpose, and laid ourselves out to carry the mails at a contract rate of speed; moreover, all our vessels are built so that they may be ventilated in the largest possible degree, and every one of these ventilation holes is a great source of weakness when you would set about the difficult task of strengthening these vessels, so as to enable them to carry an armament." These companies could not put aside their old fleets, because that would simply mean insolvency. Besides that, there is another reason. All these vessels that are now employed by the Post Office in carrying the mails under subsidy, suffer a very great deal from competition with other companies, which are not incorporated in the same way, and which are not subsidized by the Post Office, and yet which do carry mails for nothing; and in the course of some ten years we may almost assume that there will be no longer in existence any such thing as subsidies for mail steamers. Already a very large number of the existing companies are in great fear as to what they shall do in consequence of having over-built themselves. Witness, for instance, the Pacific Company, which has more ships than it can profitably employ; moreover these large mail steamers, if they burn more than a certain proportion of their coals are brutes. If any man has stood in Panama, or at the New Zealand terminus of that line, and seen those magnificent mail steamers come in at the end of their voyage, he must have been horrified to see what bladders they were, lying on the top of the water, and it is a fact that in those vessels the greatest care had to be taken to see that they did not get a permanent list. In the last days of their voyage you would see these ships—then "flying light"—swaying from side to side. With regard to the steamers eight times their beam, unless they could be always maintained at one particular measure of immersion, they would not be safe to carry guns on their deck. Neither, if war broke out, would we find artisans sufficient to refit them for purposes of war; for we have not at the present moment men enough in our dock-yards. Every man who reads his half-a-dozen papers a day—as he ought to do—and keeps his eyes open, knows we are on the eve of a very terrible war, and I do not believe we could take twenty or thirty of these vessels, and suddenly and swiftly prepare them and send them out. They would have to go out, remember, to fight all comers, and they are utterly useless when the coal is out of them. They must find coal wherever they go. They will not be able to say, as now: "Good bye; "this day ten days I shall be in New York." Those competing mail steamers burn coal without any economy at all. Engines of the most economical class are put into them, but they are all competing with each other, and if one makes a shorter passage than another by an hour, there is a paragraph in every Liverpool and every London paper the next day about it. They are living the life of men who compete with one another, knowing that the chances are that some one or other of these companies must cave in, because, for the most part, they have over-built themselves, and their carrying powers are larger, particularly at this present moment, than this country has any demand for. If you were to take the whole of the mail steamers employed by the Post Office, I doubt if you would find amongst them twenty vessels that could be made fit in a reasonable time, supposing war broke out, to carry a 64-pounder on their upper deck, and I have very much doubt whether the firing off of those guns, say, half-a-dozen times, would not reveal such defects in their construction as would make you very much surprised to think you could ever have had the audacity to place such a gun on board. Even if we had any number of these vessels, we have nobody to man them. One speaker has said he very much doubts the statistics with regard to the number of British seamen. I am perfectly certain that, do whatever you will with those statistics—you may be the greatest master of hanky-panky in statistics that ever existed in this world—but you cannot find four men to every ship that are fit to be called seamen. You may stretch a point, and assume that you have two able-bodied men to each ship, but the rest must be made

up of ordinary seamen, landsmen, and boys; and can you expect that joining the Naval Reserve for a month's drill in each year will make them of any value in time of war? Men turn round and say in their vernacular "*Cui bono?*" What benefit "do I get by it?" Nothing at all. Not only that, but there is another reason why "I should not join the Naval Reserve. The Government has laid open the mercantile marine, which used to be the *British Merchant Service*, as a trading school "for the seamen of all the nations in the world, and I find the foreigner in every "grade and position. I have lost my bread, my industry, and my ambition; I am "without hope; I do not care anything about it, and I intend to go out to the "colonies, and remain there permanently, and become a citizen, and not follow the "sea any longer." We do not now find that class of men going into the merchant service during these last ten years that used to flock to it when I was a boy. You may find an advertisement in the "Daily Telegraph" from a firm for apprentices, who are to be allowed to wear midshipmen's uniform, which means that no two persons on board ship will be found to be dressed alike. A very large number of these youths who are thus invited and trapped are the sons of opulent tradesmen, and after a few years they find out that the life is a hard life, that it demands great self-denial, and a considerable degree of brains, and greater application than they thought, and they forsake it, so that we have not now in our merchant service any of those boys, of whom we once had such a number, growing up to men whose delight it was to fight. I take it as an absolute necessity if any man goes into the Navy, he must love fighting for fighting's sake, and I take it that merchant seaman joins a fleet ship in the hope that she will be so fleet that if she meets an enemy she will be able to run away, and never fight at all. In fine, there is an utter absence at this moment, as there has been for years, of anything like sympathy between the men who serve on board the merchant ships which now sail under the British flag and those men by whom her Majesty's vessels of war are manned, and for the simple reason that in every point, their lives are as different as it is possible that lives can be.

Captain CARMICHAEL, 5th Royal Irish Lancers: The speaker who has just sat down said that this question of shipping is affected very much by the gospel of England that we must buy in the cheapest market and sell in the dearest. Now, we bring forward these questions at this Institution, not so much as soldiers and sailors, but as Englishmen, and it is because we believe that in the end the commercial classes will have to buy in the dearest and sell in the cheapest market if they neglect the Navy, that we open these discussions. With regard to the armament of these cruisers, perhaps I may be permitted to draw a simile from the Army. If we send out a cloud of cavalry, composed of three squadrons, and there is only one opposed to us, we prevent the enemy doing us a great deal of injury; but if the enemy bring up their heavy artillery and infantry, we have to retreat. So, if we have a numerous body of light cruisers, we shall defend ourselves from a great deal of damage that we should otherwise suffer; but when the heavy ships come up, no doubt we shall have to give way, and if we have no heavy vessel to meet those of the enemy, we shall suffer. But plainly we are better off with a great number of light cruisers than without them.

The CHAIRMAN: If nobody else wishes to address us on this subject, I think I may gather up your opinions in this, viz., to thank the lecturer, Mr. Brassey, not only for this lecture, but also for the previous one, and for the amount of attention he has uniformly given to these subjects, greatly to the benefit of the nation as well as of the Navy. I am sure you will all join with me in thanking him, and hoping that he will continue his attention to them as efficiently as he has done.

## LECTURE.

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Friday, June 9th, 1876.

GENERAL HORT, C.B., in the Chair.

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### THE STUDY OF MILITARY HISTORY BY THE REGIMENTAL OFFICERS OF THE ARMY.

By MAJOR LONSDALE A. HALE, R.E., Instructor in Military History,  
&c., &c., R.E. Establishment, Chatham.

MAJOR HALE: General Hort and Gentlemen,—If any excuse is required for an Engineer Officer undertaking to deal with this subject, concerning as it does more particularly Officers of the non-ordnance and mounted services, I hope it will be found in the fact of my long and intimate educational connection with those services, a connection which I look back to with the greatest pleasure, and which I am glad to say is not altogether terminated. Among the conclusions to which that connection has led me, there are two or three on which I would base my observations this afternoon.

The first of these is, that there seems to be an impression on the part of regimental Officers that the study of Military History is not incumbent on them as a body; that it is incumbent only upon those of them who intend to lay themselves out for special employment, such as employment on the Staff. I hope to be able to show in the course of my observations this afternoon that that idea is altogether unfounded.

The next is that among those Officers who do make a study of Military History, there is a very large amount of labour misapplied. It is misapplied with regard to the character of the reading, especially as respects the period of Military History which is the subject of study. As an instance of this, I may mention the case of two Officers whom I met a short time since—two Officers of different ages, of different ranks, belonging to different branches of the service, and, I am perfectly sure, of different intellectual tendencies. Both told me that they wished to study Military History. I asked: “For what purpose—“whether as an intellectual study, a literary study, or with any other “object?” They said the purpose they had in view was to make themselves better soldiers in the field. I then asked them what they proposed to study, and they had both struck upon the same book, Napier’s “History of the Peninsular War.” As they told me that their object was to become practical soldiers, I, not unnaturally, said:

"Then of course you have read all about the campaign of 1870 and "1871?" No, they had not read much in connection with that war; that is to say, those two Officers, in order to become practical soldiers, were about to study the tactics of a period when men fought, so to speak, across a pocket-handkerchief, whereas now they fight across the main-sail of a man-of-war; of a period when, if a man fired at a church-steeple, he, according to an old saying, was lucky if his shot fell within the parish, whereas individual men can now-a-days be struck by small arms at about 1,000 paces, and artillery boast that troops are not safe from them at upwards of 4,000 yards. These Officers were merely typical of a number of others, who begin their studies altogether at the wrong end. They should begin with the events of the most recent campaign, inasmuch as the tactics therein pursued are more like, though not exactly like, the tactics of any future campaign in which they may be engaged.

I also find that the regimental Officers who do study the most modern Military History do not study the right documents. A class of writers has sprung into existence to whom we are doubtless very much indebted—essay writers. I am not talking of prize essayists, but of essay writers generally, and I find they are a very popular class of writers, and very much read by regimental Officers. I do not wish to say one word against these essay writers, but I do feel it to be my duty as an instructor in tactics, especially to protest against the *undue* importance which is attached to the writings of these gentlemen. They are, as a rule, men who have seen no service whatever in modern war. They are most industrious people; they collect a very great number of facts, and on those facts they build up their own theories. Now, of all facts which it is difficult to obtain, the most difficult are those which occur on a battlefield; and when we have obtained those facts we know there are numerous stand-points from which they may be viewed. I would, therefore, ask the regimental Officers not to put implicit faith in, or to ascribe too much authority to, these writers, but first of all to study the original documents connected with the last campaign, and having provided themselves with the means of ascertaining the accuracy of the facts that these essayists deal with, to use their own common sense, and to test the theories of the essay writers.

We are very fortunate in having at hand authentic documents connected with the campaign of 1870-71. First of all, we have them in the Official Account of the Franco-German War, 1870-71, which has been translated by Captain Clarke, R.A., of the Quartermaster-General's department. And with regard to that translation I wish to bear my humble testimony to the marvellous fidelity with which the original has been rendered into English. Then we have them in a book called "The German Artillery in the Battles near Metz," by Captain Hoffbauer, which has also been translated for us by Captain Hollist, of the Artillery. These two documents are drawn up by responsible persons and are founded on accounts furnished by responsible persons. The compiler of the official account has not had to depend for his information on the disposition of individuals to give it, but he has had before him reports of commanders of all companies

and all batteries engaged. They have been collated by the Staff at Berlin, and thus we have one of the most truthful accounts which it is possible to obtain of the events of a campaign. It bears the most searching analysis; and if ever it can be shown to be other than accurate, you may rest assured that the well in which tactical truth lies is unfathomable. But if you want to read this, you must be prepared for hard study. It really is hard reading. You won't find any sensationalisms in it; you will not find any "tall writing," as it is called; everything is described in the simplest and plainest manner. For instance, when in the Prussian account you find a regiment falls short of cartridges, you are told simply and plainly that the ammunition ran short; you are not told that the men raged angrily and furiously for their cartridges. When Von Steinmetz appears on the field of Columbey and finds fault with the generals who brought on that fight against his orders, you do not hear anything of "the grand old "boy's favourite oaths." There is nothing of that kind to be found there. The only "tall talk" I have been able to detect throughout the book, are the words "hero's death." There is no more high-flown language than that. When a man is killed, he is sometimes said to have died of a hero.

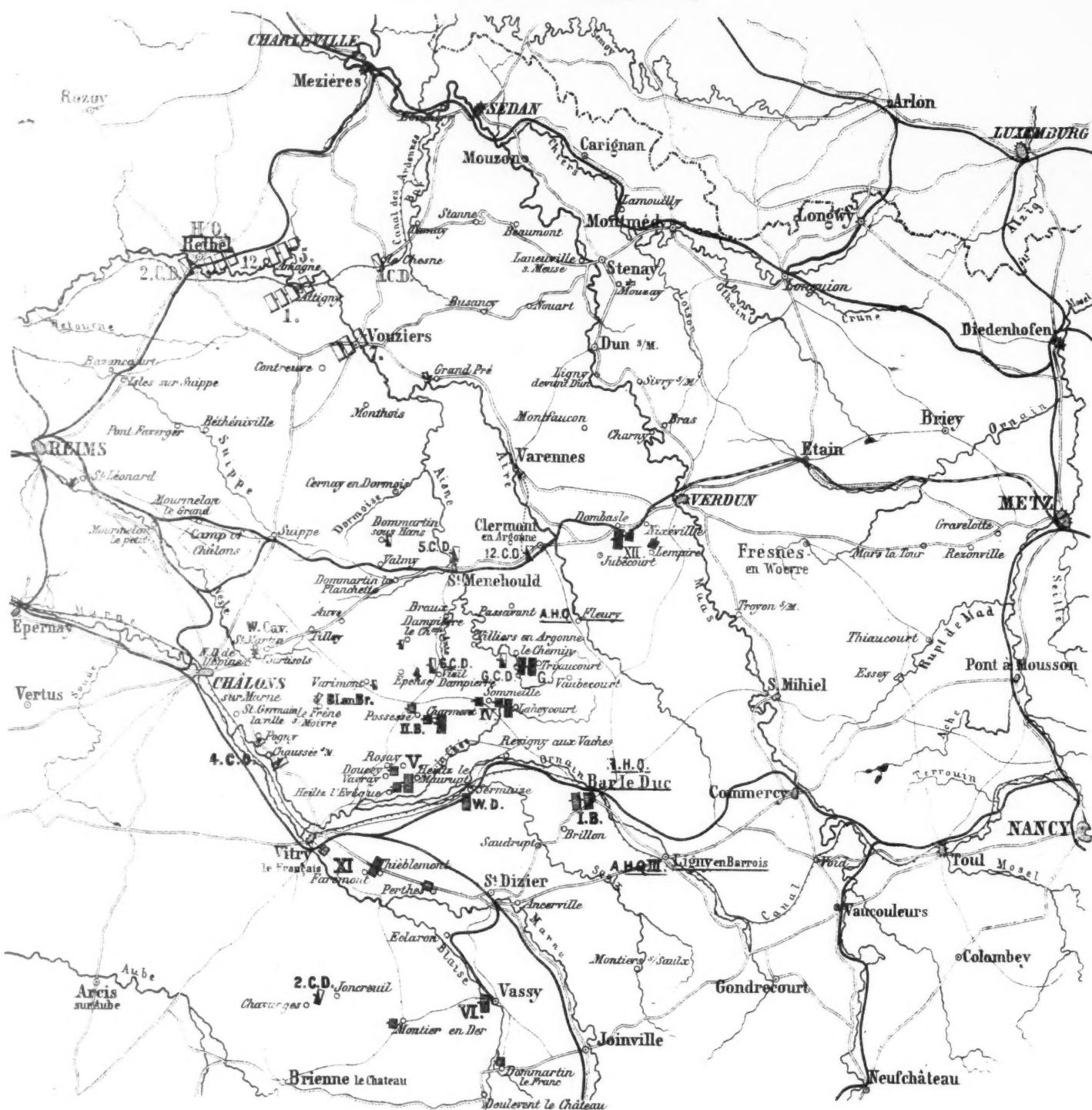
It is to this account that I would direct the attention of the regimental Officers of the Army. In such a wide field it is somewhat difficult to select instances to illustrate the value of its study, but I have taken as the first illustration, the conduct of the German cavalry on the 26th of August, 1870. With regard to anything that I have to submit to you, many cavalry Officers may say: "Oh, we knew all that before; " we were told that our non-commissioned officers ought to be well "instructed, and we quite believe it; we were told how much depends "on looking after the shoeing of the horses, and keeping the horses in "good condition; these are mere truisms." But I do not think that Cavalry Officers, unless they have studied this book, will find anywhere the practical application of these instructions so clearly laid down.

*Sketch 1.*—On the 23rd of August the Army of the Meuse and the Third Army, under the command of the Crown Prince of Saxony and the Crown Prince of Prussia respectively, set out from the line Jean-delize-Gondrecourt. They were ordered to march in the direction of Châlons, where, during the 23rd, the French army were supposed to be. During the 23rd, 24th, and 25th of August there was no change whatever made in the direction of the line of march. The total strength of the two armies was upwards of 200,000 men, and their orders were that on the 26th the advanced guards should arrive at a much shorter line, St. Menehold on the north and Vitry on the south, and there be able to act against the French at Châlons. Up to the evening of the 25th no alteration whatever was made in the original direction of the line of march, and on the evening of the 25th we find the German corps in the position shown on the sketch (Plate XV). On the right were the 12th, or the Saxons; in front of them was their own cavalry division: in front of these were the 5th Cavalry Division. The Guards and the 4th, who were the remaining corps of the Second Army, were on the



25th August.

French Meuse Army III Army



0 10 20 30 40 Kilometres  
0 5 10 15 20 25 30 35 40 Miles

Doranfield 12 Bedford St. Covent Garden.

left of the Saxons, covered by the Guard Corps Cavalry Division. Farther south were the troops of the Third Army, viz., 2nd Bavarians, the 5th and the 11th Corps, and on the extreme left the 6th Army Corps; the Wurtembergers and the 1st Bavarians were in rear of the 5th Army Corps. The 2nd Cavalry Division, the 4th Cavalry Division, and the Wurtemberg Cavalry Brigade covered the front. But during all this time information was gradually being collected at the King's head-quarters, which were first at Commercy and then at Bar-le-Duc, to the effect that the French were not at Châlons any longer; that they had moved off north-west, in the direction of Rheims. And not only that they had so moved off, but intelligence received also asserted that they were on their way, not towards Paris, but in an easterly direction, so as to effect a junction with Marshal Bazaine, who was at Metz. But Von Moltke was an old soldier, and he would not allow himself to alter the direction of the line of march without being perfectly sure of his grounds for doing so, and it was not till 11 a.m. on the 25th that any order whatever for the slightest change in the line of march was issued. When that change really took place, great inconvenience and great suffering were incurred by the German troops. That change of direction is sometimes thought an easy business, but if you look at Hugo Helvig's account of the march of the Bavarians you find they suffered very much by that change. The alteration made was very slight. Believing that the French might be at Rheims, but doubtful as to whether they had gone off to meet Bazaine, Von Moltke simply ordered that the line of march should take a north-westerly direction; that the 12th Army Corps, instead of going towards St. Menehold, should incline slightly towards Vienne; that the Guards and the 4th Corps should move up in a similar direction, and that the corps down in the south should accelerate their pace; but at the same time he issued this order, which was a very important one, viz., that the cavalry should be *thrown well forward to reconnoitre the front and right flank and reach more especially Vouziers and Buzancy*.

Von Moltke knew that if the French had really started from Rheims in the direction of Metz, in all probability a large proportion of them would be found upon this main road running from Vouziers and Buzancy either to Dun or to Stenay. It was, therefore, of vital importance to him to know what was going on at Buzancy and Vouziers. After he had issued this order, fresh intelligence came in, and the Prussian Head-Quarter Staff were gradually brought to be nearly certain that the French were actually on their march to relieve Marshal Bazaine; but still nothing definite for the future movements was absolutely determined on.

On the evening of the 25th of August, Von Moltke obtained the sanction of the King to make provisional arrangements for a march towards the north-east, by which, in the event of it proving correct that the French were actually on the march towards Marshal Bazaine, he would be able to concentrate, on the 28th, at Damvillers, on the eastern bank of the Meuse, seven Corps d'Armées, a force of about 150,000 men, to act on the flank of the French.

But in order to do that, it was necessary to have recourse to a most dangerous expedient. We know perfectly well what the relative positions of the French in Metz and the Germans round Metz were at this period, and that if Marshal Bazaine had then made a determined effort to break out, there can be little doubt but that he would have succeeded. Yet, notwithstanding this fact, of which the German leaders must have been perfectly cognizant, two Prussian corps were ordered up from Metz, in order to effect this concentration at Damvillers. That was owing to the uncertainty as to the exact position of the French forces. It was felt that if they had really started from Rheims at the time alleged, and had marched well, the only chance of stopping them short of Metz would have been at *this* point; most important it was therefore for Von Moltke to know exactly what was taking place on this main road.

The Crown Prince of Saxony had his head-quarters at Fleury, on the right flank, and he would receive the cavalry reports sooner than would the King; the initiative was therefore left to the Prince, and he was informed that the movement of the troops to the north or north-east might be deferred until 12 o'clock on the 26th, and if by that time no news had been received from the cavalry, then this change of direction was at once to take place; but it was hoped that in the meantime information would have been received from the cavalry which had been thrown out.

Von Moltke was ready to wait till 12 o'clock on the 26th before initiating this movement; the Crown Prince of Saxony at once orders the flanking movement to commence at 5 o'clock on the morning of the 26th; at the same time he sends out his cavalry in accordance with the orders he has received.

The cavalry of the 12th Corps are ordered to bend round, and go into bivouacs at Bantheville. The 5th Cavalry Division were ordered to bend round and try to get through Grandpré, towards Buzancy, whilst the 6th Cavalry Division were ordered to go direct to Tahure, and look out towards Rheims and the north.

I will give you a detailed account of what the cavalry did under those circumstances, obtaining all my information from the official account.

First with regard to the cavalry of the Saxon Corps. They bent round from Clermont, in a north-east direction. When they were ordered to change direction towards the north-east, they left a flanking patrol five miles from Grandpré. Whilst there, there came out from Grandpré a French squadron, which drove this small patrol back on a Prussian squadron, and the Prussian squadron were enabled to follow up the French squadron, who apparently retired through Grandpré, and to send information into the Royal headquarters as to what they saw. The information which they sent in to Von Moltke at Clermont was this: "At Grandpré, and Chevières" (which is a small village close to Grandpré), "hostile troops. *The enemy is retiring at this moment to the northward of Grandpré.* Infantry, 'cavalry, and carriages are seen, but it cannot be distinguished if they 'are artillery.'" Among the many points connected with that, you see

the caution with which the cavalry-leader frames his report. He does not say at once that there *are* artillery, but he fairly owns he cannot see what the vehicles are. Imperfect information is better than a misstatement. Here was this astounding report, that the French are absolutely retiring to the north. That information was sent into Clermont, and reached the Royal head-quarters at 7 o'clock in the evening. The man who took it, had some 20 miles to go (measured in a straight line), and in a strange country; that was very fair riding. At the same time, another Saxon squadron reconnoitred also to the north from Bantheville, and came up to Buzancy (be good enough to remember, only one squadron), and there, to their astonishment, they saw a couple of French battalions, not going to the east, but right away to the west, and information of that was also sent to the Royal head-quarters, and appears to have been received in plenty of time in the evening. Another squadron reconnoitred towards Dun, where it was supposed the French might be in the act of crossing, and they found that the French were not there, and had never been there. That was all the information which was available from the 12th Cavalry Division.

The 5th Cavalry Division started out and attempted to fulfil its mission, but as they approached the Aire they found themselves fired upon, and all the information which they transmitted to head-quarters was to the effect that troops of all arms were around Grandpré, and that they themselves had been fired at. That was all the information which was available at Royal head-quarters before 11 o'clock on the night of the 26th.

The consequences were, that at 11 o'clock on the night of the 26th, the Chief of the Staff of the Army of the Meuse, who was at Royal head-quarters, received orders that the march towards Damvillers was to be continued the following day, and that the two Army Corps from Metz were still to come up there. It may, I think, be assumed that the continuance of this movement is owing to the non-arrival of certain information from Vouziers and Buzancy. That information, and most important it was, was on the road.

While the 5th Cavalry Division were changing their line of march to the north-east, they had thrown out one solitary squadron towards Vouziers. From that, non-commissioned officer patrols had gone out, and one of them under a Serjeant Brohmann sends in word that it has arrived within two miles of this important point (Vouziers,) and that the enemy is posted in considerable force eastward of the town. That information was obtained during the afternoon, but owing to some fault committed by somebody—whether a sore back of a horse, or an Officer not being able to read a map, or a horse having gone lame, or thrown off a shoe, is not recorded—that message, which was so important, and which had to be carried only twenty-five miles, took twenty-four hours in transmission, and arrived only too late. But you may say that was only a non-commissioned Officer's report, and even if it had reached head-quarters much stress would not have been laid upon it; but there was straying about the country a confirmatory report from an Officer of the 6th Cavalry Division. The orders of the

6th Cavalry Division were to go to Tahure and search the country towards Rheims and the north. They did so. They threw out patrols, and Lieut. Von Werthen, an Officer of the 16th Hussars, at half-past five in the afternoon, obtained a perfect view of the French positions at Vouziers, and on the basis of the personal observations of this Officer the 6th Cavalry Division sent the following report to Clermont:—"The heights east of Vouziers, between Chestres and Falaise, "are covered with camps of all arms. On the road to Longwe, stand "one or two cavalry regiments with a battery and a rifle battalion "in front. At Chestres, columns are now emerging from the wood "previous to encamping. On this side of Vouziers is a squadron "of Lancers. The town itself does not appear to be occupied by "infantry. The inhabitants say that there are about 140,000 men "assembled at this point. McMahon is at Attigny, and is expected here "in two days." This report was supplemented by the statement that the detachments which had proceeded towards Chalons and Rheims had not as yet come into collision with the enemy, but that all the French troops were said to have been sent northward from the former neighbourhood.

Here we find the cavalry have obtained two vitally important pieces of information (and how true they were, can be seen from the positions of the French Army on the 25th, shown on the plan), but owing to some accident, this valuable information from the Officer, which had to be carried only twenty-five miles, was ten hours and a quarter in transmission, and arrived too late to cause any alteration in the following day's march. On the evening of the 26th, Von Moltke was left without any authentic information as to where the French were on that day, and this dangerous movement from Metz had, as has been observed, to continue. The information obtained was, however, thoroughly reliable; and throughout the subsequent days of the campaign, seldom do we find incorrect reports sent in by the German cavalry.

But now by way of contrast let me point out to you what took place on this same day among the French, and really it reads almost like a play. On the 25th the 7th Army Corps, under General Douay, were at Vouziers; they had thrown out an infantry brigade and a battery partly to Buzancy, and partly to Grandpré. The rest of the French Army were executing on the 26th a wheel to the right on Vouziers as a pivot. On referring to the map, we find the 1st Cavalry Division thrown out well to the front, where there are no Prussians at all; the 2nd Cavalry Division is carefully stowed away in rear of the centre, where there cannot possibly be a Prussian. During the 26th, information kept coming in to General Douay at Vouziers as to what was taking place in his front. We do not know who supplied the information, whether it was a Staff Officer or a cavalry patrol, but whoever it was, the information sent was utterly erroneous, and this erroneous information was received with credulity by those to whom it was sent. In the first place you may remember there was a Saxon cavalry squadron out opposite Buzancy. They saw two battalions marching away. These two battalions came in towards

Vouziers, and reported a "vigorous action" at Buzancy. The position of the Prussian infantry on the plan shows the absurdity of that report. Then from Grandpré more information came in to the effect that the Prussians were advancing in force. Now all that was at Grandpré, were detachments of cavalry and the 5th Cavalry Division; and to complete the discomfiture of the French, in came from the south of Vouziers itself a report of the presence of a strong force of Lancers at Monthois. This was Serjeant Brohmann's squadron: nothing much larger had advanced near Vouziers. Here we have a small force of Prussian cavalry magnified into the whole Prussian Army. Of course, General Douay, who was in command, at once thought he was being attacked by the Prussian Army. He ordered his advanced brigade to withdraw to Vouziers, and he drew up his whole Army Corps in fighting order, as the Officer of the 6th Cavalry Division told Von Moltke, and he began to entrench himself. His whole corps remained the whole night in the pouring rain, expecting an attack from a large force. In the meantime General Douay, believing in the intelligence he had received, sends back word to Marshal MacMahon who is in rear, and MacMahon, on the night of the 26th, orders the whole French Army up to Vouziers to receive the Prussian Army, and the consequence was, that the French Army on the 27th, instead of continuing their advance, were drawn up in order of battle, expecting the advance of an enemy who was not within twenty or thirty miles of them.

I know nothing that to my mind conveys more forcibly the importance of having a well instructed cavalry than these instances. I do not understand how any Commanding Officer of cavalry can read this official account without taking most energetic steps to train his Officers and men in outpost duty, or how any cavalry regiment can be efficient, if the Officers, non-commissioned officers, and men are not thoroughly practised in the duties which devolve on them when covering other troops. On the other hand, this account should make us very careful of attributing blame to commanders of armies; here were commanders of armies 200,000 strong absolutely in the dark as to each other's movements, and depending, not on trusty Staff Officers, but on the reports perhaps of a non-commissioned officer of cavalry. Therefore, when Commanders make mistakes, we should give them credit for the difficulties under which they arrive at their conclusions.

These accounts further make us realize the unpleasant fact, that the safety of whole armies is in the hands of individual persons; commanders-in-chief and cavalry non-commissioned officers: the former are like poets, born, not made; it is our own fault if we fail to ensure the latter being trustworthy and reliable.

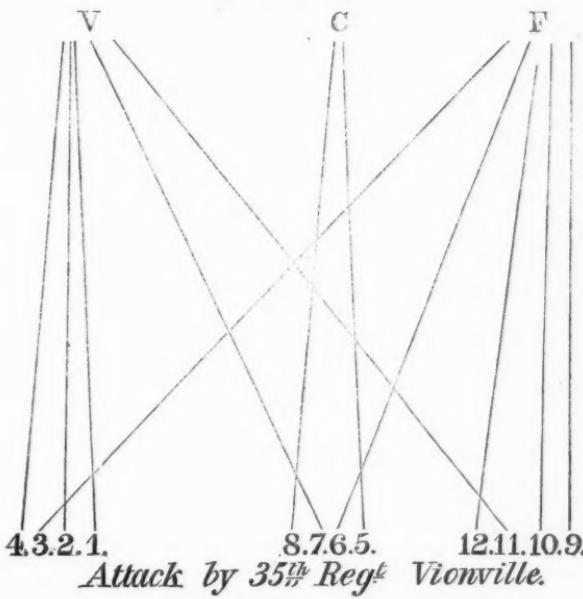
But if this account contains lessons of importance for the cavalry, it assuredly does also for the infantry. Verdy du Vernois, whose name may be familiar to most of you in his "Studies on Troop Leading," of which the translation is being continued by Lieut. Hildyard, says: "Very soon we shall have a large number of young Officers in the army again with no experience of war. It is as well to acquaint them with the dark side of this, for the youthful imagination very seldom

"approaches it of its own accord. The young Officer should be taught "war as it is, so that such occasions may not take him entirely by surprise, but find him prepared to take his measures judiciously. In "war, circumstances occur amongst the bravest and best disciplined "troops which, without the experience of war, would hardly be judged "possible." I suppose that not even the most ardent admirer of the Drill Book will maintain for a moment that we learn what war actually is from that volume; and yet one would imagine from the devotion of some Officers to it, and the ardour with which its most minute provisions are sometimes discussed, that it really taught us everything. So little do I personally believe in this, that had I the honour of commanding an Infantry Battalion I should spend my winter in endeavouring to prevent my Officers and non-commissioned officers and men drawing false conclusions from the Drill Book, and I should do that by bringing instances before them of what actually happened under fire on the battle-field. I know some very clever people tell us that what happened in the last war among the German troops will not happen in future wars among our own troops: they tell you that the Germans were led very badly and recklessly, that the troops got out of hand, and all that sort of thing. I dare say they did; there is no doubt the tactical leading of the Germans in some cases was very faulty, and no doubt in some cases they did act very recklessly; but I think every British Officer may assume that the discipline of English troops will not be more severe in the battle-field than the discipline of the German troops; I think he may assume that the British troops will get out of hand quite as much as did the Germans; and he may assume as a fact, which seems to be almost denied by some people, that foreign powder and bullets will have just the same effect on English flesh and blood as in the last war it had on the Germans. Then they may also assume that whole battalions will sometimes be left absolutely deprived of their Officers; and they may assume that in such cases the companies will go about from one side to another, ranging themselves under the command of the leader who is nearest at hand.

Then if I were this Commanding Officer I should point out that whatever may be laid down in "the Field-Exercise," positions are very seldom won by troops bounding along 50 paces at a time, and eventually forming line two deep, or even single rank, at the position; I should point out that the battle sways backwards and forwards, that the bounds are as often to the rear as to the front, and that a great mixture of troops ensues. The official accounts tell us, also, among other things, that when troops come under fire they take one of two courses. If they are going towards a certain point and are taken in flank by fire from another direction, they will either edge away under the cover of ground to get out of the fire, or else they will turn towards the fire that takes them in flank and endeavour to go forward and meet it.

I should illustrate this by this instance, which is one of the most striking in the book. Sketch No. 2 shows the advance of the 35th Regiment at Vionville. The three battalions of the regiment were given well defined points on which to advance to attack. There is

no doubt that the field being new to the Officer who gave the order, he did not quite see the relative importance of these three points. He directed one battalion of four companies on to Vionville; the centre battalion was directed on the clump of trees, and the third battalion was directed on Flavigny. As a matter of fact, these three battalions starting from one line, the centre one had the most difficult task, because the clump of trees lies in a re-entering angle, and the men advancing on it would suffer from the fire from both flanks. Of the first battalion Nos. 1, 2, 3, and 4 were sent against Vionville. The third company



may possibly have been a little in advance of the others, at all events, they found themselves struck by fire from the clump of trees, and they not only bent away to the clump of trees, but right across the battle field to ground 1,000 yards away, and are found fighting at Flavigny: the Fusileer battalion on the right acted similarly; three companies go where they are ordered; but the 11th company finds the fire rather hot from the clump of trees, and absolutely crosses the path of the third company, and is found an hour afterwards fighting at the village of Vionville. Of the 2nd battalion in the middle, the 5th and 8th companies were the rear companies, and the 6th and 7th leading. The fire was very hot from the clump of trees, and therefore the 6th and 7th, intent upon taking the clump of trees in flank, bent away from the direct line of attack, but instead of coming round

to it, the 6th is found at Flavigny and the 7th at Vionville; and the only two companies who went straight to the front were so utterly crushed by the overpowering fire that they were driven back, and rallied on the reverse slope of the hill. If such a thing occurred among the Germans, I cannot see why it would not be likely to occur again amongst ourselves.

Next observe what happened at the battle of Beumont to the 26th Regiment, of three battalions. The regiment had to pass through a not very extensive wood, but when it got to the other side, the three battalions were found split up into two bodies. Sketch No. 3 (Plate XVI, fig. 1) shows the details of one of these bodies. As you may remember, the companies in the German army are composed of three divisions, one of which is the shooting division. The 8th company has lost its shooting division altogether, and the 5th company is doing its work. The 7th has managed to stick together; but the 1st and 2nd shooting divisions have strayed from the main bodies of the 1st and 2nd companies which are in another part of the battle-field. The 3rd, 4th, 9th, and 12th each hold together, but the 11th does not do so, and its shooting division appears here alone.

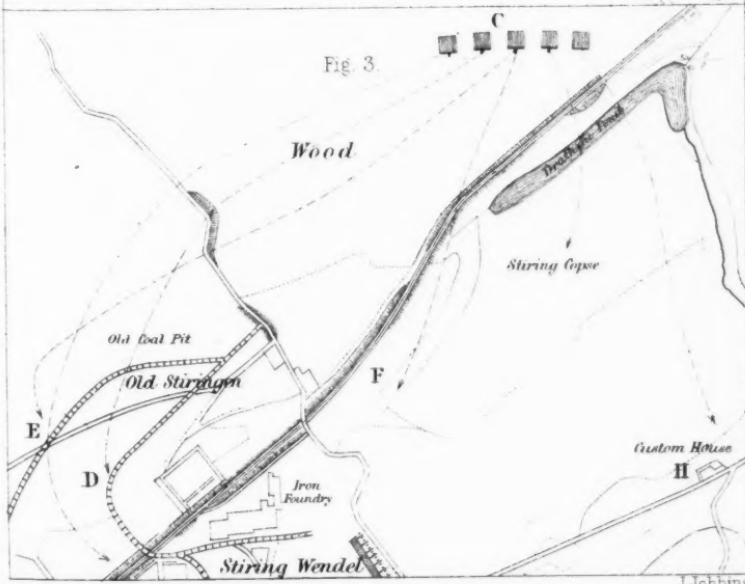
Let us take another instance, sketch No. 4 (Plate XVI, fig. 2), the storming the Rotherburg on the field of Spicheren. The leading of that battle undoubtedly is open to the gravest and most severe criticism; but the mistakes which occurred, were not due only to the local leaders, but to misunderstandings in the strategical leading which preceded the fight. The advanced portions of two armies are directed upon the same bridge, and the consequence is, that in the course of the action, we find parts of three divisions or of four brigades joining promiscuously in the fight. What was the result? The Rotherburg, which is shown on the sketch, is the point aimed at. It is a very marked feature on the field, and projects beyond the line which was occupied by the French, and unless it was taken, it would take in flank any Prussian troops coming in a southerly direction. It proved a very tough job for the Prussians to get hold of that point; but at 6 o'clock, the fighting having lasted from 12 o'clock, we find a curious collection of companies at this important decisive point. What became of two brigadiers I do not know, but with regard to two others, their brigades were spread along a thin line at the beginning of the day, so that their command was entirely lost. We find 32 companies of two different armies mixed up in utter confusion, with no unity of command whatever, viz., 5 companies of the 74th Regiment, and 4<sup>3</sup> companies of the 39th Regiment, belonging to the 27th brigade, 14th division, 7th Army Corps, 1st army; 11 companies of the 40th Regiment belonging to the 32nd brigade, 16th division, 8th Army Corps, 1st army; 8 companies of the 12th Regiment, 10th brigade, and 4 companies of the 48th Regiment, 9th brigade, 5th division, 3rd Army Corps, 2nd army.

Sketch No. 5 (Plate XVI, fig. 3) shows a curious instance of a brigadier losing his brigade. The dotted lines show the distribution of the 28th Brigade, General Von Woyna. When the General arrived on the battle-field he resolved to endeavour to turn the French left flank, and he told

Right wing of 26th Reg. after passing through the Bois de Givendael

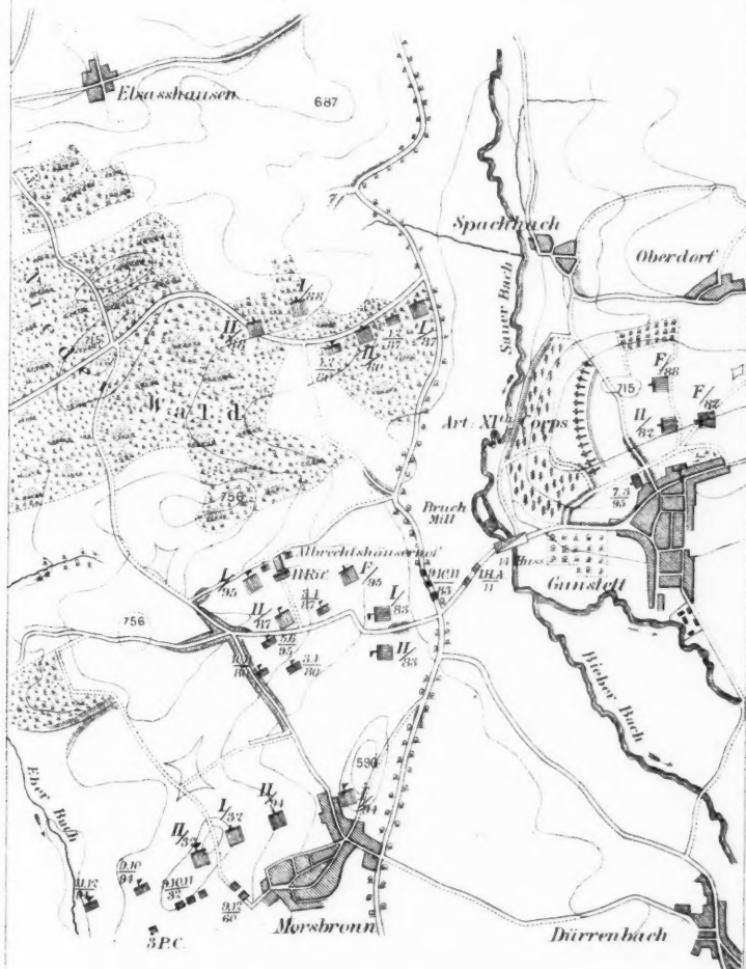


Fig. 3



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Distribution of the Troops of the XI<sup>th</sup> Army  
Corps in the Attack on the Niederwald.



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his five battalions, starting from the point marked C, to follow him through the wood up to the village of Stiring Wendel. The brigadier started with the leading battalion through a rather dense wood, and struck upon the open at the point D. He then looked round for the remainder of his troops, and found nobody with him, so after fighting a little time, he went back. In the meantime his next battalion had tried to follow him, but they had also failed. They debouched from the wood at the point E, to find that their brigadier whom they were following had gone. The next battalion, comprising four companies split up, two companies following the last battalion, and the other two, arrived at the point F. With regard to the two remaining battalions, a curious incident occurred. General Francois, who, after fighting gallantly and nobly, fell leading a battalion, turned round and saw at the point C, on some rising ground, two battalions. He immediately sent off an officer to bring them up. They were the last two of Von Weynar's brigade, whose original orders were to follow the brigadier through the wood; one comes into the copse, and the other is found shortly afterwards fighting at the house H, two miles away from the right flank of the brigade. I instance that as showing the difficulty of brigade-leading in a difficult country.

Perhaps the most prominent example of the difficulty of unity in command is shown in Sketch No. 6 (Plate XVII). The 11th Army Corps came into the battle of Worth on the left flank, and as they came up they had at once to take part in the engagement. As each brigade arrived on the field, instead of being led *en masse* by the brigadier to a certain point, it had to be broken up and sent to the most threatened points. Therefore the brigades were split up, and the brigade commands ceased. There being three points against which the army corps could be directed, we find troops belonging to different brigades and divisions mixed up at these points.

In the Niederwald, parts of the 80th and 87th Regiments, 41st brigade, 21st division, and of the 88th Regiment, 42nd brigade, 21st division. At the Albrecht'skairserhof are engaged some of the 87th Regiment, 80th Regiment, 41st brigade, 21st division; 95th Regiment, 43rd brigade, 22nd division; and 83rd Regiment, 44th brigade, 22nd division.

At Morsbrunn we find the 94th Regiment, 44th brigade, 22nd division; the 32nd Regiment, 43rd brigade, 22nd division; and the 80th Regiment.

The accounts in this book go into detail with regard to the companies in the most precise and apparently correct manner, and I do think if an infantry Officer will put aside everything else, and study this book closely and carefully, he will be prepared for almost anything which may happen on the battle-field, and not be liable to be taken by surprise.

I now approach the subject of artillery. After the campaign of 1866, artillery were at rather a low ebb, but since the campaign of 1870 and the Okehampton experiments, there is nothing now that artillery cannot do. With regard to those experiments, let me say as

an instructor in tactics I rather regret that they were not more exhaustive in one point of view. The artillery at Okehampton smashed cavalry to pieces and slaughtered Major East's infantry, but they did not have any very extensive experiments on artillery itself. For instance, it would be desirable to learn whether Hoffbauer's remark holds good that artillery under fire can execute a flank march; also whether guns, the position of which is indicated only by the flash of the discharge, can be struck by artillery; and we learn nothing about the loss the guns would have suffered from the opposing artillery when Major East's infantry were advancing to the attack. Experiments such as these would have required much time, but would have been of great value.

With regard to the statements which Hoffbauer and other artillerymen make respecting the doings of their own arm, it may be remarked that these statements must be accepted with caution, as must also the examples which they bring forward. When I find an instance quoted from Hoffbauer bearing in one direction, I have generally not very much trouble to recall to my memory other instances from Hoffbauer bearing in the other direction. He deals with the battle of Columbey as if it were a great artillery success. But why was it? Because the French did not want to attack the artillery. If we may believe the statement of a French Officer, who has written "Three Months with the Army at Metz," Marshal Bazaine distinctly gave orders to the French not to assume the offensive. Therefore no attempt was made to drive the Prussian artillery away.

The most remarkable differences in the behaviour of artillery under fire occur not far from each other on the same battle-field. The 1st Horse Artillery battery of the 4th Army Corps remained all day in, or close to, the position it took up at 9 A.M., west of Vionville; but the 2nd Horse Artillery battery of the 3rd Army Corps, which came into action at the same time, retired within an hour before infantry skirmishers, when the skirmishers had succeeded in approaching to within from 1,200 to 1,400 paces of the guns. I do hold most strongly to the power of artillery; but the instance most to the point in the earlier battles of the war of 1870-71, of which we have authentic details, tells against the guns. At the battle of Noisoville, which was fought over the same ground as that of Columbey, there were sixty German guns drawn up on a tongue of land running down from Poix and Sevigny towards Metz. The French infantry came down, and before these French infantry, the sixty guns had to retire to the German infantry line. I will give an instance showing the necessity of exercising the caution of which I have spoken, in receiving the details of any fight from a member of a special arm. General Von Bulow commanded the artillery of the 3rd Army Corps, and he has evidently communicated to the Prussian War Office and to Hoffbauer his view of the artillery battle; but Captain Hoffbauer apparently did not quite know what to do when he received this information. He found a certain amount of respect must be paid to the report, but I do not believe he thought for one moment it was accurate. Therefore he adopts the compromise of putting Von Bulow's report in a foot-note.

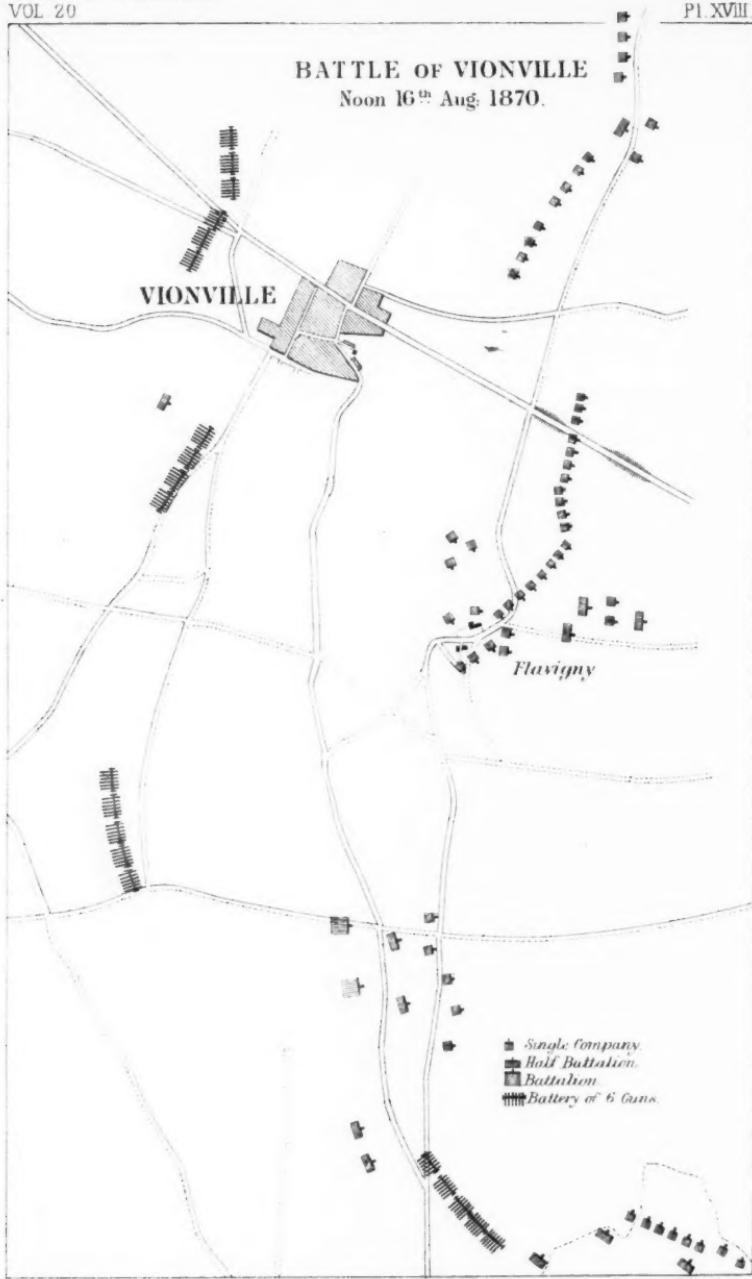
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BATTLE OF VIONVILLE

Noon 16<sup>th</sup> Aug. 1870.

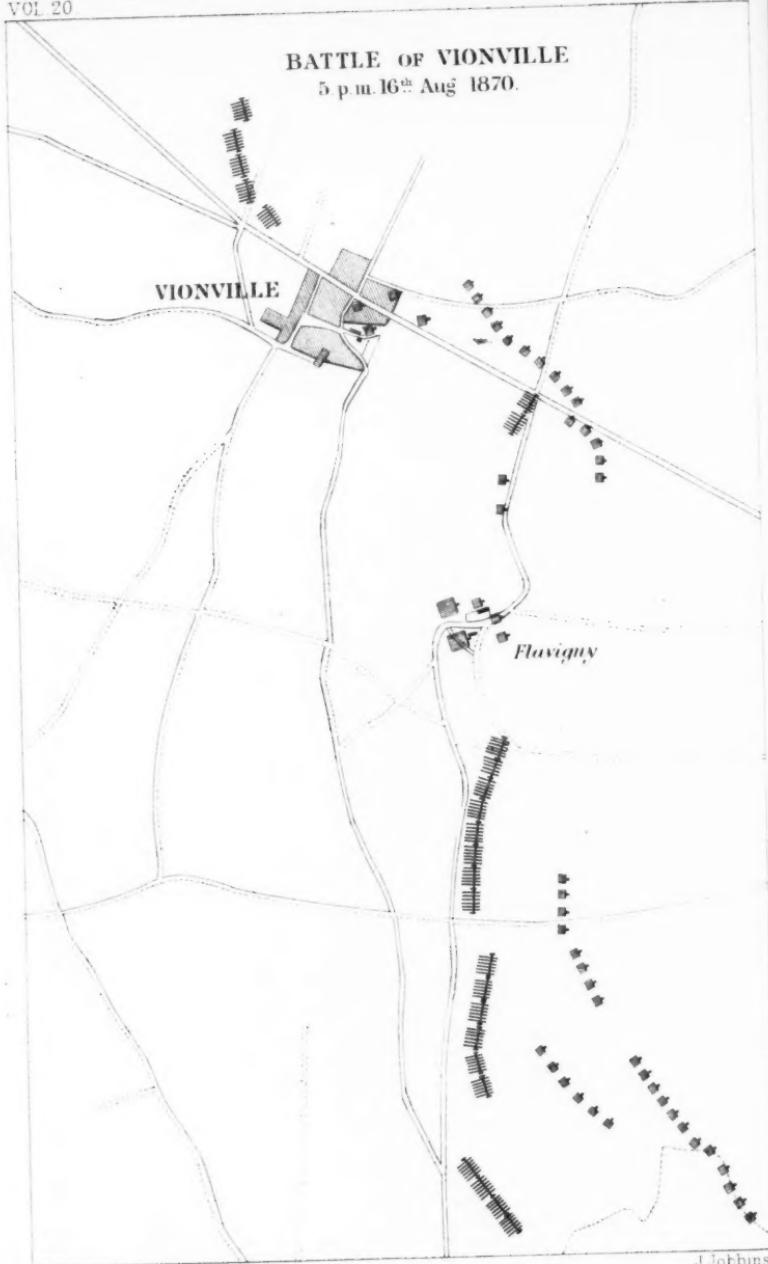


III

Jobbins

BATTLE OF VIONVILLE

5 p.m. 16<sup>th</sup> Aug. 1870.



"General Von Bulow states that from the time of the capture of the farm "of Flavigny" (which took place at 12 o'clock), "up to that of posting the outposts in the evening" (which took place at 8 or 9 o'clock), "there was not a single infantry soldier within reach of the artillery "of the centre, or, in other words, from the position of the right "wing of the corps of artillery on the hill as far as the 4th heavy battery, near the high road; the farm of Flavigny alone being occupied "by two companies. The artillery was consequently obliged to defend "itself against the attacks of the enemy's skirmishers, which was "done with perfect success." Directly I read that, having also read the official account, I felt there must be some mistake. I turned at once to the Staff account and to the Staff maps, and the sketches Nos. 7 and 8 (Plates XVIII and XIX) are the statements which they furnish. It is a very natural mistake for General Von Bulow to make. A gunner does not look around to see if infantry are coming up to help him, he relies on his guns, and he peppers away on the infantry in front, not caring two straws whether the infantry come up to protect him. The General saw the French retreating, and naturally thought it was caused by his own guns; but the infantry had been really near him in support, and when the infantry came to write their account, they corrected the not unnatural description which General Von Bulow has furnished. That is the clue to what some people think an exaggeration, but which I think merely the one-sided view of what takes place, which artillery Officers give of the actions in which they have been engaged. I do not think infantry have very much to fear in the future. The ground they will have to fight over will be very much like what they have fought over hitherto; and if we take into account the ground, and the fire which will be poured upon the batteries by the assailant's artillery, I think that infantry will find just the same scope for action in the future as they have enjoyed up to the present time.

Lastly, with regard to the corps to which I have the honour to belong, there are lessons for them to learn from this war. I hope I shall not be thought an ill bird if I venture to speak of one little failing of the Royal Engineers. I do not know if they really do possess *any* failing, but if they do, it is attaching undue importance to one word in their motto, the word "*ubique*." They seem to think that the Corps of Engineers can be ubiquitous under all circumstances; and this feeling is rather nourished by the practice of "Peace manoeuvres." I do not think any General has ever commanded a corps at "Peace "manoeuvres" who will not say that the engineers were ready to go anywhere and do anything required of them; but then there are many Officers of engineers who imagine, because they can be everywhere in peace time, they can be so in time of war also, and in this they are encouraged by the cavalry and infantry. I know there are a great many engineer Officers who imagine that the duty of the destruction of an enemy's communications in front of his railway bridges, railway lines, telegraph lines, &c., properly belongs to the engineers; and cavalry Officers, who think this work is not in accordance with their brilliancy and dash, say, "Do it by all means." I am glad to find the authorities taking a different view, and we have now started a cavalry

pioneer class at Chatham. I would ask any engineer Officer to take this map (sketch No. 1), and see the enormous extent of country covered by the cavalry divisions, and then try to devise any possible organization of engineers by which he will be able at the right point always to have engineers ready to act upon the communications of the enemy in front. It is absolutely impossible. A cavalry regiment can only be deemed able and efficient to perform its duty in covering the advance of its own army, if it is prepared to undertake a certain amount of pioneer duty as well as those of reconnaissance. On the battle-field, it is just the same; and we have a difference of opinion in our own corps upon the subject. Some Officers tell you—“We will do all the “intrenching;” and an Officer of an infantry battalion, when I urged him to learn a little field-fortification, said to me: “Why should I? “It is your fellows’ work, not ours.” But I will ask you to take any field of battle you like, and tell me how you can be sure that when an army comes up and gains possession of some position, you can arrange that the engineers shall always be at the right point when they are required. What is more, you will find sometimes, as happened at Vionville and Wörth, that, owing to the necessities of the moment, the engineers have been taken away from their proper duties, and are fighting side by side with the rest of the infantry. My opinion,—and I think it is the opinion of many others,—is that the duties of engineers and infantry on the battle-field must, to a limited extent, be absolutely interchangeable.

I have now dwelt upon the desirability of the study of this book by all branches of the service. I should very much regret if anything I have said should lead you to read this book in order to see what grand fellows your own branch of the service in particular are. That is not the way to study it. It should be studied page by page, paragraph by paragraph, sentence by sentence, line by line, and then you will arrive at the conclusion that an army does not consist of four isolated members, but of four members bound up in the closest and most intimate union; and I venture to think that an Officer who, with an exaggerated feeling of *esprit de corps*, sits down to the perusal to find out something which shall delight him with his own corps, will rise, I won’t say humiliated, but humbled. He will find that although on the field of Vionville, the artillery of the 10th Army Corps went forward without any escort and effected most useful results without much harm to themselves, he has merely got to turn over a few pages to find that when, two or three days afterwards, on the field of Gravelotte, the artillery of the 9th Army Corps repeated that manœuvre, they encountered, what I cannot but consider, a crushing defeat. The cavalry Officer who boasts that he can ride down everything because those six squadrons performed prodigies of valour on the field of Vionville, merely has to turn back a few pages, and he will find that a division of cavalry who attacked infantry, unshaken by artillery fire, were compelled to ride back with severe loss. And the infantry Officer who thinks because his arm succeeded at Spicheren, almost unaided by artillery, they can always do so, has merely to go a little further, and he will find the Germans themselves admitting that infantry trying to

attack infantry without any aid from artillery must assuredly meet with repulse.

The lesson we here learn is, that if one member of a body be not properly cared for, it becomes weak and inefficient; if it be taken too much care of, and is over-nourished and expanded beyond its right size, it becomes a deformity.

The value of this study will not, I venture to think, be confined to war-time only; it will be just as valuable for peace. The army is a society subject to exactly the same rules as every other aggregation of human beings, and therefore we find that it is not when war threatens us that the bonds which bind us together are in danger of being loosened; it is in the sunshine of peace, when we have not very much to employ our time, that, in the words of the old proverb, "the devil "finds work for idle hands to do." It is then that we cease to be to the failings of the other branches of the service "ever kind, to their "faults a little blind." It is then that the specks on the characters of the other branches of the service grow into dark ugly spots.

Gentlemen, from time to time there crop up for decision, questions affecting us each and all, questions of vital importance to the service, questions connected with organization, with the distribution of duties, with supersession, with promotion, with appointments to the Staff or other offices. When they arise, the first thing we do is to ask (and not unnaturally), "How will this affect me?" Then, "How will this "affect my branch of the service?" And too often, according to our selfish instincts, or deluded by our *esprit de corps* alone, do we form an opinion on the question. But to a man who has studied the accounts of the campaign with which I have been dealing, to him, when such questions come up for consideration, there will arise, almost spontaneously, the recollection of dangers which the four arms have shared in common; of perils which by each other's aid have been averted; of glories which by the unselfish assistance of the other branches his own arm has won; and, softened by these recollections, and bearing them in mind, he will try to come to a decision, animated solely and entirely by that grand principle without which an army becomes merely a collection of armed hordes; that principle which, if it is required, as for aught I know it may be, at Chatham and at Woolwich, is equally wanted elsewhere,—the good of the service first, the good of my own corps, the good of my own branch of the service, it may be the good of the regiment, afterwards.

The CHAIRMAN: I am sure you will all join with me in giving our best thanks to Major Hale for his very interesting lecture.

## LECTURE.

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Friday, May 26, 1876.

The RIGHT HONOURABLE SIR HENRY BARTLE E. FRERE, Bart.,  
G.C.B., G.C.S.I., &c., &c., &c., in the Chair.

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### MILITARY TRAINING, A MEANS OF ADMINISTRATIVE POWER AND OF POLITICAL USEFULNESS.

By Major-General Sir FREDERIC J. GOLDSMID, C.B., K.C.S.I.

THE subject selected for the Lecture on the present occasion may seem neither inviting nor utilitarian, nor can I lay claim to the possession of those special powers of attraction which make the Lecturer, as it were, independent of his theme. But I will, at least, endeavour to substantiate my proposition by illustration and argument. Succeeding in this, it will be comparatively easy to deal with the later question of practical application. Failing in it, I must hope that your time and attention will not have been entirely thrown away, and it is not improbable that from any after discussion provoked, something of advantage may be extracted.

It has been common to depreciate the public usefulness of military men in an unprofessional sphere. Whether this be the tendency or not at the present moment, when diffused knowledge is doing so much to raise, level, or revolutionize, is another matter. There can be little doubt as to what have been the true causes for such an opinion. In the first place, the preliminary education has hardly been that of the learned professions. Few men who have distinguished themselves at college have become soldiers. Few men indeed who have read up to a high mark in classics are content to forfeit the natural fruits of their reading for the problematical honours of a military career. Secondly, the ordinary routine of garrison duty and the direct requirements of drill and discipline are not favourable to broad intellectual development. Questions that immediately arise to the thoughtful Officer out of his professional experience are so far important in that they affect the comfort and well-being of his fellow-creatures, the honour of his country, and the advancement of science. But they are under serious limitations: human nature is regarded in a state of artificial control,

glory is ever associated with trumpets and weapons of war; science is purely that of attack or defence. Thirdly and lastly, the social aspect of military life is not such as to leave the outer world impressed with the belief that the school is a good one for cosmopolitan usefulness. The popular notion of a mess-table may not be always the true one, but it is not absurdly incorrect; and it is difficult to tone down an exaggerated picture, once credited and received, to a guise of truth to which the spectator's mind is unaccustomed. Now, though I am willing to admit that the intellect may not have been fairly exercised for the world in a mere professional routine of soldiering, I maintain that the intelligent and observant Officer who in vigorous manhood may be called from such restricted field of action to public life, has rather benefited than lost ground by his military associations. He has known and felt the value of discipline and organization. He will have to apply them in a less practical and severe form to mankind at large, than has been his wont with soldiers: but he will never regret the absolute experiences of his course of study; and at the close of his career he will probably arrive at the conclusion that he could not have started on a better basis than that of military training. I am not speaking here of that nominal experience which is required for qualification for promotion in special cases, but of the hard, real training of a soldier, without any claims to exception, or, it may be, without any *wish* for exemption from the ordinary every-day lot of his fellows.

Let us begin with a boy's education at the period when the abstract profession is the guiding-star to his future. If the pupil is to be a soldier, he must be prepared for Woolwich or the line, and according to the particular fancy of parent or guardian he is sent to a public school, a private school, or a crammer—perhaps from one to the other. Should the boy be studiously disposed and self-helping, nothing to my mind, under present circumstances, could be better for him than the English public school; nothing certainly could be better at any time, were due attention only given to what is called the "Modern Department," an introduction of recent date, and consequently imperfect and of partial use. In such an arena as this, companionship is formed with members of those classes which, independently of recruiting society in its broader sense, commonly supply the nobles and princes of an intellectual world; and the training and discipline which serve to develop the genius of the tyro-ecclesiastic, lawyer, statesman, orator, and poet, would be equally at disposal for the profit of the future military commander. This is the healthy atmosphere in which the latter may safely reside up to the period of examination, whether for further academic and purely professional instruction, or for active professional life. Should a boy, on the other hand, be idle, or indifferent, or wanting in intelligence, I presume that the private school and the crammer may present greater advantages for his tuition than the other. But the process by which the backward or mischievous youngster becomes, as he sometimes does become, a distinguished man, is a little foreign to our present purpose. His personal history is perhaps of itself evidence that he has an exceptional genius, which makes him more or less independent of rule and system, though I should be inclined to

suggest military discipline as the best corrective for his early shortcomings.

Woolwich and Sandhurst have of late years undergone many and notable changes. We may readily believe that these have been effected as much by the spirit of the age as by professional requirements: that they have been worked out, in fact, much in the same spirit as the reforms in all public schools. It is, therefore, reasonable to conclude that the several systems of the several educational establishments in England has been to some extent assimilated as well as the *morale* improved; and that there is at least a stronger sympathetic bond of union between the Eton and Woolwich, or Harrow and Sandhurst of the day than was ever known before. Let us take a passing glance at what has been the standard of military education in one material branch.

An excellent authority on Woolwich, in a work of fiction so closely akin to fact that its evidence is fully equal to that of an official report, thus speaks of the mathematical studies of a cadet thirty years ago: " My course in mathematics consisted of plane and spherical trigonometry, conic sections, statics and dynamics, properties of roofs and arches, hydrostatics, projectiles, and the differential and integral calculus. In this course I had obtained a very good decimal, and therefore might be said to have a fair knowledge of the subjects. I was, therefore, anxious to compare my mathematical knowledge with that of a Master of Arts of Cambridge, and discover, if possible, how much longer it would take me to work up to the extent requisite to become M.A. To my surprise I found that the gentleman from Cambridge knew only as much mathematics as I did when I was in the second class, and, in fact, if I had been at Cambridge instead of at Woolwich, I should have been distinguished all my life as M.A., and should, of course, have been looked on as an authority on such matters as mathematics by people who had no other means of testing one's qualifications than by the literary annex after one's name." But this ambitious tuition may have been overdone, and liable to degenerate into cramming, to the detriment of practical soldiering. For further on he says: " The defect that I experienced after leaving Woolwich was that I found considerable difficulty in writing a clear account of any event in a concise and grammatical manner, so that had I been called on to write a despatch, and describe officially some action or battle, my production would have been discreditable. I could solve an abstruse question in dynamics, but I could not write three sentences in English correctly. Again, as regards the method of conducting discipline with soldiers, what their pay was, how they were paid, how men were treated for various offences, &c., I was as ignorant as a civilian, and there was then no preparatory training for an officer after joining the Artillery by means of which he could learn these matters." But he adds: " Defects such as the above-named have since been almost entirely removed, whilst various other matters have been improved at the Academy;" and although apprehension is expressed that "the cadet's comfort is too much cared for," it is

most satisfactory to find recorded the opinion of an experienced Artillery Officer that at this particular hour, it may be fairly asserted on behalf of the Military Academy at Woolwich, it is "perfect of its kind, and the training given there will compare favourably with that of any military college on the Continent."<sup>1</sup>

As regards public schools and what they are, I might quote from many modern tales of real life, not the less true from the use of fictitious names, all charming in their way, and useful in illustrating the popular education of the period. Of these the best known and not the least bright and attractive is "Tom Brown;" but allowance must of course now be made for the salutary reforms which have rendered its darker pictures obsolete. As for the high-minded masters of these institutions, notwithstanding the great individual examples of an age fast passing away, their work and influence have in no wise deteriorated. Still is their teaching of that wholesome kind quite as fitted to the soldier as to the scribe; still is the aim of teaching to go forward; there is just the one reservation to the aspirant's young ambition, and that is, he must not restrict the desire of progress to the narrow limits of personal advancement; the mind must not be narrowed by repeatedly numbering individual steps, or too seriously brooding over cases of individual good and bad luck in promotion, to the exclusion of higher objects. I say nothing on the utility of Chaucer and Greek iambics to a military student. On these, as on other details of army-examination, it seems to me there is room for reconsideration and improvement, without injury to the mental refinement or general accomplishment evidently kept in sight.

To school and college studies the passed candidate will find added drill and discipline, both of which, notwithstanding the instinctive dislike of many novices to either, have to certain minds a positive fascination. Those whose tastes lead them into this particular groove are deserving of every respect: they are the mainstay of an essential daily routine; it is to them we must look for keeping the professional progress of the British Army up to the mark of the continent of Europe. Great attention to the minutiae of dress and carriage is perplexing to some civilians, and is not even always apprehended by the wearer of volunteer uniform: the value of regimental distinctions in respect of tying a scarf, has to my recollection puzzled a superior civilian mind; but I confess to an opinion that where a profession, such as that of arms, has once been adopted, it should be adopted *in toto*. Moreover, where regulation is the backbone of discipline, as in the Army, regulation must be supported and followed, unless suspended or repealed; and so long as common things, commonly expressed, are associated with duty, an Officer's business with buttons and pipeclay is never too trivial to be done carelessly or otherwise than well.

And now let us ask what is the natural result of a constant regard to externals and the physical attributes of man, to the aspect of humanity in its mechanism—if the world will have it so, to the reduc-

<sup>1</sup> "The Gentleman Cadet; a Tale of the Past." By Lieut.-Col. A. W. Drayton, R.A. London: Griffith and Farran. 1875.

tion of a thinking fellow-creature to a passive machine? Is the general tendency of such practice to lower or to elevate? Of its effect upon the ploughman or the ordinary recruit, there can scarcely be two opinions. He rises in the scale of humanity if he only feels that he is somebody beyond the limits of his village; that his name is called over with that of hundreds of his fellows, and of sufficient importance to be missed if not responded to; that, as Charles Kingsley says, "he "has a character of his own, and a responsibility and a calling of his "own." Not that he might not, and should not feel much of this in his original sphere, but that in nine cases out of ten he does not. His wages, his food and sleep, and his holiday-making, are his pleasures—the rest is work. And here we have the very material once considered the prize prey of the ensnaring sergeant. Experience has demonstrated that the best type of the infantry soldier is to be found among the agricultural and working classes. This estimate has more, perhaps, to do with the actual *physique* than the mental powers; but fortunately for the recruiting officer, in these days of highly paid labour, there is a wider field of selection open, where mind is more on a par with matter. It is needless to detail the various trades and callings represented in the Engineers and Artillery; nor is the line wanting in diversity of elements. As regards the Cavalry, about two years ago it was stated on excellent authority, and in this very room, that many gentlemen who failed at Woolwich and Sandhurst examinations, besides clerks, who could not, with the agricultural labourers, take to pickaxe and shovel work, became recruited into this branch of the service. Men of such stamp winning their commissions, come especially within the pale of our present argument. To them apprenticeship in the ranks is in no way a disqualification for loftier aims—in fine, for the development of statesmanship or administrative capacity. Proof positive might be given of a directly opposite result, so that I am putting forward no new theory.

And why should Drill and Discipline lower the mind of the educated Officer, even if he give his earnest attention to the thorough mastery of the one, and apply his energies to assert and maintain the other? To learn that a man should take 75, 108, or 150 paces in a minute, and that the length of each pace should be 30, 33, or 36 inches; that he should always commence his movements with the left foot; and that his two feet when in repose should form an angle of 60 degrees, is not more derogatory to the intellect of the pupil than would be a study of the alphabet or rudimentary arithmetic. The daily inculcation and repetition of these military aphorisms, with a vigilant regard to their practical observance, may to some minds appear an irksome duty; but in truth the onerous part of the work is borne by the adjutant; and, off the parade-ground, captains and subalterns of companies are hardly more harassed by misapplication or misapprehension of professional rudiments on the part of those under them than the classical scholar is by men who speak in recklessness of grammar or disregard to quantities. Were it otherwise, how, in innumerable cases, would time be spent? What are the occupations to which we *voluntarily* abandon ourselves? Are they one whit more instructive, or

worthy of attention, in an intellectual point of view, than the "balance "step" or the "turn of the head in dressing?" Surely there are conventionalities in the world of fashion and *etiquette*, a study and practice of which is imperative upon the highest order of intellect, and knowledge of which is acquired without complaint or consciousness of detriment. Again, some of the most accomplished diplomatists at home and abroad have been renowned for a punctilious regard to ceremonial forms which in themselves are trivial and absurd. In some courts, especially in the East, there is a meaning in ridiculous *minutiae*, the comprehension of which is of vital consequence to the envoy and the cause he advocates. Among Persians, a chair pushed an inch or two forward or backward, so as to transgress the border of a particular carpet marked for its limit, may cause serious offence; a cup of tea, or a tobacco pipe missing from the conventional number offered to a guest, may awake hostile feelings; there may be hidden mischief in a misapplied word of welcome or farewell, in a clumsy gesture, in a new-fashioned article of wearing apparel. Trifles could hardly go farther in the way of puerility; but it is a part of common sense diplomacy to acknowledge with gravity things which are to all seeming the most opposed to common sense. It is hoped that these studies do not unfit the mind for more genial and manly occupation; for if they do, ministers of long experience in Asiatic courts must be incapacitated for transfer or promotion. But as nothing of the kind is admitted, it may be reasonably argued that continuous attention to intelligible and rational details, such as the bearing and behaviour, the dress and cleanliness of the soldier, has no really injurious or cramping effect upon the intellect. Beyond this stage of military routine, drill merges into science, and needs no more defence or explanation than does the presence of grammar in literary composition.

On the other hand, are there not instances in which the constant practice of elementary drill and the continuous maintenance of military discipline supply results which should be instructive even to candidates for diplomatic or administrative honours? The conversion of a throng of awkward bumpkins into a smart regiment of combatants is an experience which has its uses for the statesman as for the soldier; and the habit of enforcing, as of acknowledging authority, is one, the acquisition of which is essentially the duty of every *employé* of Her Majesty's Government. Nowhere, perhaps, can it be so well acquired as in the orderly room and in barracks, and on parade.

But let us go a step further, and look at the captain busied in the interior economy of his company; when the happiness and well-being of many fellow-creatures are more or less affected by his daily ruling and actions. If he possess tact, and judgment, firmness and kindness, and has a sufficient experience, he should prove a good Officer. If he be wanting in these, or any of these—for the four are not always combined—it may be presumed that he will sometimes err. In such case, the best thing that could happen for himself and his men would be the reversal of his decision where it had failed in fitness, and censure in however mild a form. But we will suppose, as we are amply justified in doing, an individual example where practice has led to a

certain perfection: where the captain is as just and wise in his own decrees as he is true to the regulations of superior authority. What training could be better than this for a public yet non-military career? It would teach the diplomatist that breaches are repairable rather by tact than by temper; the statesman that the only true popularity is that born from the belief in justice and good faith, and the diplomatist and statesman both, that the appreciation of men by personal acquaintance, is far more accurate than that derived from report and hearsay channels seldom untainted by bias and interest. It knows nothing of party spirit or of favoritism—it has but one aim, to uphold the discipline of Right. Punishment is administered where necessary, and promotion is only given or recommended where it has been earned by merit. I am not one of those who take legal exception to the abstract justice of Courts-martial, and am, on the other hand, inclined to pin much faith to their findings and sentences. But I will go yet further, and express the opinion that if appointments in high places were distributed on the principles which guide the hard-working regimental Officer with his men, there would be less causes of complaint on the score of unfair supersession than at present. Those who agree with me, and I am sure there *are* some such, will also agree that a lesson of this importance is not confined in its application to the ranks of the Army. It has a universal bearing, and assuredly are its influences wholesomely exercised in the sphere of national administration and politics.

But of all the advantages in military training to the public man attaining power and usefulness, none is of higher moral significance than experience of those physical trials and hardships which are incidental to a military career. The prolonged campaign with its chequered journal of success and reverse, the station in a noxious climate with its rolls of pestilence and mortality, the long sea-voyage with its episode of storm and shipwreck, all these situations tend to bring out the nobler qualities of men, to test the stuff of their *morale*, to develop and cement the brotherhood of nature's brothers; and those who have come well through the ordeal, may be congratulated on having served an honourable apprenticeship. This sense of proved manhood and consciousness of having incurred habitual danger, awaken, as it were, the generous impulses of the heart, and lend assistance towards estimating the claims of fellow-men. If possessed by the statesman in power, his perceptions become quickened in the detection of true worth, his sympathies are at once enlisted in the cause of those who have done solid service to their country; he feels a personal pride and pleasure in rewarding the deserving and rejecting the pretensions of men who rely only upon party or family interest. I know not whether I have made myself intelligible in this particular argument, which may, after all, be more a question of sentiment than of logic, but I thoroughly believe in its soundness. It advocates a form of truth which is rather intuitive than prescribed. It speaks for something akin to the boy's admiration of the sailor after his first experience of a boisterous sea, and who can say that such admiration is not warranted and confirmed by the long experience of the man?

It had been my intention, on arriving at this stage in the present paper, to have cited the careers of illustrious individuals in support of my case; but as a lecture provocative of discussion must necessarily be brief, and as the citation contemplated, to have been effectual, should have been full and inclusive of many historical periods at home and abroad, I have abandoned the notion. It is one, however, suggestive of scrutiny, and I would commend it accordingly to abler heads and hands than my own for development. Suffice it now to state, before calling your attention to India, in which country I propose to find the materials for further consideration of our subject, that my original purpose has not been put aside from the consciousness of any lack of individual examples, either in this country or elsewhere out of Asia. For instance, the name of Wellington will naturally offer itself as that of a soldier-statesman of eminence in our own time, whose administrative power and political usefulness owe much to military training. The great qualities which will cause his memory to be honoured, elsewhere than in the annals of military Commanders, were unquestionably matured by the professional life he had led, and the habits he had acquired in that life rather than by any adventitious advantages of birth or family connection. "Such men," wrote a thoughtful teacher, on the eve of the funeral in St. Paul's, "take a century to grow, and "we cannot have another such in this generation. If you could find "a man equal in genius, you could not have the tried of eighty years "until eighty years are gone. This old dull country, which the "filigree nations laugh at, with her inconsistencies and her prejudices, "how sound at heart she is in the way she does her hero-worship, and "what unique heroes her's are! Duty, the watchword of Nelson and "Wellington, the last sublime battle-cry of the one and long life-law "of the other, and no splash or dash nor French theatricals about "either of them. . . . Goodness, duty, sacrifice, these are the "qualities that England honours. She gapes and wonders every now "and then like an awkward peasant, at some other things, railway "kings, electro-biology, and other trumperies, but nothing stirs her "grand old heart down to its central depths universally and long "except the right. She puts on her shawl very badly, and she is "awkward enough in a concert-room, scarcely knowing a Swedish "nightingale from a jackdaw, but blessings large and long upon "her! she knows how to teach her sons to sink like men amongst "sharks and billows, without parade, without display, as if duty were "the most natural thing in the world; and she never mistakes long "an actor for a hero or a hero for an actor. Men like Arnold and "Wordsworth she recognises at last, men like Wellington, more "visibly right, at once, and with unalterable fidelity."<sup>1</sup> I have quoted the words of one of a different cloth to that of the military biographer; but the writer was of a kindred spirit to all true heroes, whatever their field or calling.

If I now turn to the Indian Army as representing *par excellence* the field of the English soldier-statesman, it is from the conviction

<sup>1</sup> The late Frederick W. Robertson. See "Life and Letters by the Rev. Stopford Brook, M.A." Smith, Elder & Co. 1868. Page 406.

that within the sphere of that Army, have been found, from the very first, special opportunities—I may say *the* actually desired opportunities—for aspirants to administrative and diplomatic distinction. And here it is that we seek accordingly the more abundant instances of successful administration and successful diplomacy carried out by professional soldiers. From the time of Clive and Close, or the trusted Cornwallis (sent back at sixty-five years of age as the fittest ruler for an Indian crisis), the later days of Malcolm, Ochterlony and Munro, the still later experiences of Burnes and Pottinger, and up to the comparatively recent administration of Sir Mark Cubbon, Sir Henry Lawrence, and others living, in fine for a century and a quarter, there has been no lack of names from which to select illustrations for our purpose; nor is the present generation wanting, nor does it show the least sign of failure in the supply. Let us take a passing glance at quite modern annals.

In the Afghan campaign, however much military men may have been involved in responsibilities which brought both blame and honour to the bearers, it cannot be said that its chapter of disasters was inaugurated by military advisers or soldier administrators. That one of the presumed younger counsellors of the State had "graduated," as we are told, "in the learning of the camp, and that his after studies "had done much to perfect his acquaintance with the tactics and "strategy of modern warfare," is unimportant evidence, because in the first place I am not limiting the notion of military training to a "little learning," and secondly a question has been raised with regard to the precise counsel here tendered.

The administration of the Province of Scinde under Sir Charles Napier was, without doubt, the outcome of an enlightened military view, of which the wisdom was proved by after events. Those who succeeded him in government were not ashamed to admit the successful results of his practical statesmanship, and the noble spirit in which he worked. Few readers of the "Administration of Scinde," chronicled by a distinguished historian, will cavil at the writer's reference to the surprise felt by one of England's greatest Ministers at the extraordinary talent for his work of the military Governor. "It cannot be supposed," he fairly argues, "that Sir Robert Peel's "astonishment sprang from the vulgar, contracted English notion of "military men's intellects; he must have known that a consummate "captain cannot have a narrow genius, and that service in every part "of the globe must have furnished such a person with opportunities "for observing different forms of Government."<sup>1</sup>

After the annexation of the Panjab and British Birmah, it was on military Officers that devolved much of the work of organization and settlement; and the records and present condition of both provinces bear testimony to the thoroughness and ability with which this important duty was performed. In types, such as illustrated by Herbert Edwardes, Nicholson, and others whom it might be invidious

<sup>1</sup> Kaye's "History of the War in Afghanistan." Book II. Chapter 4.

<sup>2</sup> "General Sir C. Napier's Administration of Sind." By Lieut.-General Sir William Napier, K.C.B. London: Chapman & Hall. 1851.

to specify, but some of whom are still breathing and in harness, is to be found the stuff not only of warriors but of diplomatists. To my humble apprehension of the powers of this class, the only element it *may* want of completeness is the polish of European practice, the habit of the *salon* and the Continental tongue. Where this is combined with the ruder and more essential experience of camps and Oriental Courts, we have at once the ready-made statesman or ambassador, if not for every service, then for special service only. But we should remember that these *specialities* are of vital moment. It is with the greatest respect for recognised authority and the diplomatic service, and in a spirit, I hope and believe, of ingrained conservative loyalty, that I venture the suggestion, to test somewhat more freely than heretofore the skill of soldiers in unravelling political knots. They will be able to use the sword, if all other methods fail; but it is a vulgar error to infer that a knowledge of its uses would lead them to resort causelessly to the Alexandrian remedy.

The Indian Mutiny, with all its horrors, was not to this country a mere episode of storm and darkness. Its flashes of light were as penetrating as vivid, and served to disclose the faces of good and true men in crannies where they would have been unobserved at ordinary noon tide. Here the crisis demanded, as it were, a military head for immediate action; but the causes of the crisis, and its whole course of treatment, were subjects for statesmen and administrators. Yet in this notable instance, while civilians grandly came forward to help their military brethren in the hot work of physical suppression, it cannot be argued that soldiers were wanting in the council chamber. That was, indeed, a time for India to distinguish efficient workers from "hard bargains." The cant phrase of "right men in right places" then derived peculiar significance. In many instances, unsuspected heroes arose out of circumstances; for there never was a fitter opportunity to bring forward and recognise solicitants to deserve well of their country. But an Empire like British Asia should not be dependent on circumstance to find her true supporters. Her Government should always know those whom it would be of advantage to consult on the occurrence of a crisis, whose sword is the sharpest and truest, as well as whose judgment is the most profitable to direct. A crisis *did* arrive in 1857; and truly fortunate—let us say Providential—it was that the authorities at the helm of affairs, and less widely responsible executives, had in themselves sufficiently the elements of greatness to be qualified for the all-important task which then devolved upon them.

A military man, in India, does not come to civil employ, as may be supposed, without some technical knowledge of his new duties. The details of "Revenue" work present to his mind a certain novelty, and need close and careful study. Much common sense and sound reasoning power are indispensable to their mastery; and in instances where centralization has overstepped the mark of local requirements, it may be that regimental discipline will be found useful in practising that which is not always approved. But in judicial matters it is otherwise. The intelligent Officer, conversant with military law and practised

in courts-martial ranging from regimental to general, has practically nothing to acquire but form in the civil dispensation of justice. His appreciation of evidence is fully up to the mark; so also are his knowledge and estimate of native character. He will not have dealt solely with *sipdhis*, but his personal experience of *bazars* and cantonment will have brought him in contact with a sufficient number of types to fit him for the bench or *kachhari*. In olden times, when *sipahi* battalions were not what they are now, when a smart adjutant might have been a little king (I am recording, not upholding, *this* contingency), there were few better schools for young and legitimate ambition than the staff of a native regiment. The kind of experience there acquired was precisely that needed to secure efficiency in after public life. The ground-work was admirable. Among the lessons to be learned were self-reliance, discrimination, industry, patience, and energy. The man who could fail to profit from these would not be the man for responsible posts at all, no matter his cloth or profession.

If, then, in modern Indian history, the military element of Government has been tried out of its own legitimate sphere, and found equal to the ordeal without any actual training for other than strictly professional work, may we not naturally infer that the school in which the soldier-statesmen or soldier-administrators of British India have been reared, possesses elements of usefulness beyond the range of a parade ground or field of battle? On the other hand, if we analyse the brilliant successes achieved by civilians, do we not, without in the least detracting from the intrinsic merit of individuals, acknowledge that they often indirectly result from the possession of those very qualities which make good soldiers, rather than from any professional instruction or preparation—nay, more, that these qualities have ripened and developed by association with camps? The ready welcome, in contradistinction to the disguised avoidance of responsibility, denotes a condition of mind which seems to me of all others that which is most fitted to deal with an emergency, because it implies a consciousness of power, in itself a guarantee of success. And one who has been used to active military life; to work in trenches, or watching on outposts; to eat, drink, and sleep within distance of likely shot or shell; to encourage the living and attend the dying, under circumstances of peril and despondency; should have had a better training in this respect than that of polite or classical learning and literature. I may go further, and assert that even one who has had to carry out a mere routine of garrison discipline, in the absence of superior authority, is a more qualified and promising candidate for responsibilities of the severest kind, than are many skilled diplomats whose experiences have been acquired in the closet.

And now to wind up the argument, as it were, which I have had the honour of submitting, and with which I may have had the misfortune to weary you, and to come to a practical conclusion. If it be allowed that the profession of a soldier not only does not disqualify him for general usefulness in public life, but rather fits him for certain offices outside the limits of his professional range, then let us see what are the channels of employment more manifestly open to him.

The common-sense answer will be: "Give him a position befitting his 'particular experience, proved qualifications and idiosyncracies.'" There is, however, another consideration of no mean importance to be taken into account—one of more general tendency. "What are 'the questions of the day in which the opinion of thinking military 'men would be of most value, and what the appointments out of 'their own professional sphere which they are the best calculated to 'fill?'" It shall be my endeavour to supply a brief but comprehensive answer to this very pertinent enquiry, afterwards leaving the whole matter to your disposal in discussion.

The question of the highest political interest to England at the present hour is that of Turkey and her struggles. Three years ago it was that of Russia and her encroachments eastward. Next year the excitement may be caused from another quarter: but I think the attraction will still be towards the East. In fact the "Eastern question," of which so much has been heard and on which so much has been written, may be only now in its infancy: for it has many phases and belongs to a vast region both in Europe and Asia. To meet the difficulties now presented in a wise and fair spirit, no legitimate aid should be despised, and no available means neglected, whatever objection be offered on the score of existing prejudice and wanting precedent. Ministers at home should have the most experienced and best informed counsellors at their beck and call: ambassadors and envoys abroad, especially in the countries more immediately concerned in, or affected by the threatened crisis, should be the most thoroughly competent men for their posts. Knowledge of national character and of mankind at large, appreciation of passing events, tact, loyalty, zeal, discretion—above all the sense and power of responsibility, should provide the *personnel* of the diplomatic staff, from the Ambassador and Envoy Extraordinary to the Vice-Consul and Consular Agent. We must never be at fault on the threshold of our work—that is, in the preliminary knowledge which should form the basis of our diplomacy.

But let us pause to ascertain how the matter really stands. While fencing for an open route to India, and holding cautiously back from the counsels of continental Empires which foreshadow stupendous changes, yet exercising a certain moral and passive interference not without dignity or political drift—do we really know as much as we ought to know, and could know on the state of Muslim feeling from Constantinople to Delhi? In India we should have abundant data to guide us: but it is a long, long line from the Bosphorus to the Indus, and the whole of the vast intervening tract is peopled by the votaries of Islam. These Muhammadans are not to be classed as of one family—as all Roumelian Turks, or all Anatolians, or all Persian Shiâhs, or Uzbeqs, Afghans or hybrid Indians. Yet they are liable to be so considered on the authority of travellers in European Turkey, Asia Minor, Central Asia or India, as the case may be, each viewing the general Muslim in the local specimen he has seen. An electric link of brotherhood is said by some to connect the whole of the followers of the Prophet; so that a blow to the wide-spread religion effected in

Morocco is felt and resented by the Tungán in Mangolia. Though I do not subscribe to so sweeping a theory, I think it very important that we should know the true state of things: and I am sure that independently of published volumes, there are many travellers who could give valuable testimony on the subject—some for Anatolia, some for Persia, some for the dismembered Khanates of Central Asia, some for Turkistan, and very many for India—testimony, which massed in a single blue-book, would have its lessons and its uses for diplomatists. Two-thirds of the witnesses would, I venture to affirm, be military men; several of whom I could name as having been actively employed in exploration between the Caspian and Kashghar, since I myself returned from Persia towards the close of 1872. And if this question, to be rightly apprehended, requires the testimony of soldier travellers, it is not unfair to suppose that for its solution the counsel of soldier travellers would have especial value. And not only these, but of soldier politicals also—men who know the Muslim as a priest, as a soldier, as a peasant, as a friend—in other words in his fanaticism, in his fighting, in his simplicity, in his social life. It strikes me forcibly that this minute knowledge is the true basis on which we should mould our diplomacy—a knowledge which, while it enables us to approach Muhammadanism without undue prejudice, ready to admit its merits as its defects, in no way prevents its treatment in a Christian spirit. In fact, thus qualified, we bring to the sick man the skill and intelligence of a practised physician, instead of the experimental remedies of an ordinary practitioner.

We are told, and on sound authority, that the Sultan of Turkey is prayed for in the Indian mosques as a recognised head of religion: we are told that he is, as it were, the acknowledged Khalif or Pontiff of the Muslim world; and we are taught to infer that his right to religious supremacy renders our support of this greatly embarrassed potentate an essential feature of our Oriental diplomacy.<sup>1</sup> Now, if the Indian Súnni, because he offers up prayers for a name which he cannot explain, at a distance of thousands of miles from the *habitat* of the Sultan, is to be held up as a sign of the vast power, moral or spiritual, centred in the Golden Horn, how shall be interpreted the indifference of the Arab in Turkish Arabia to the same supremacy which is ever present before his eyes in the form of a material sovereign rule? In illustration of my meaning, I recall a circumstance which occurred to me, when in those parts. While watching some Arab workmen digging a trench for the telegraph-cable at a point where the mingled waters of the Tigris and Euphrates flow into the sea, an elderly, respectable-looking native came up and accosted me. We got into general conversation, and among other things he asked what I knew of the Sultan? Was it true that such a person really

<sup>1</sup> Very shortly after the reading of this paper, a telegram reached London, announcing the actual Sultan's deposition. The report of his suicide followed. Could we learn to what extent the communication of this intelligence has affected the Muslims of India, we should have a good and useful illustration of their appreciation of a tragedy which might naturally be supposed to interest them deeply.—F. J. G. [How much more so since the second Sultan has been deposed, and a third raised to the Throne.—ED.]

existed? Or had the British, as he had heard, carried him away from Stambul? Questions of this description, if genuine, as they really appeared to be, are hardly indicative of the sentiment of a sensitive Semitic people, doubtful of the welfare or bewailing the possible captivity of a spiritual chief. But the matter is one on which there should be no room for doubt. It is too grave to be left to individual opinions, or the judgment of single, and it may be biased counsellors. The division between the Persian Shiâh and the Turkish, Arab and Indian Sûni is too well known to need more than passing mention.

I have spoken of one phase only of the Turkish difficulty; because it seemed to be the one more applicable to the subject of this paper, as suggestive of a field for the employment of intelligent and locally experienced Officers. For my own part I have sufficient faith in the cloth to believe them capable of dealing with the whole question of the Herzegovina and States south of the Danube: but shall not attempt to argue out so startling a proposition. If, however, military men be deemed in any way, intellectually or professionally, worthy of consultation in respect to the Eastern policy of Government, or to be employed as agents or executives in negotiations, explanations or complications arising from the present disturbed state of the Turkish Empire, there is another field in which they will readily find no less legitimate or congenial work. I need hardly say that allusion is intended to Central Asia, where British explorers have already made their mark, and where British *prestige* should on no account be suffered to decline. The subject is one worthy of far more time than can now be spared for it: but a very few words may define two means for the utilization of competent Officers which I do not think should be neglected. One is the continued collection of topographical and political data: the other the arrangement of *all* reliant data into a form available for ready reference. The first implies systematic travel and exploration: the second, the organization of a Central Asian *bureau* in London, a scheme on the merits of which I have before written, and in the policy of which I honestly believe. Again, would it not be a wise move to attach an intelligent Indian Officer to the embassies at St. Petersburg and Constantinople, and, perhaps, even two to the legation of Tehran—not for purposes of obtaining secret information, according to the habit of less civilised days, and after the fashion of the Oriental news-writer, but openly and in the broad light of day—for the purpose of communicating with the Indian Viceroy and Government when necessary, and advising, when required to do so, with Her Majesty's Ambassador, on points of vital importance to British interests in the East, however immaterial in the West? Such a dignified recognition of the *employés* of our Indian Empire would show the value attached by the home Government to the British Indian Army; would be highly appropriate at the present juncture; and could not produce other than beneficial results.

A few words in conclusion. I anticipate one possible answer to my case as it now stands, in the very natural remark that a soldier should keep to his profession: *ne sutor ultra crepidam*: and that it is

unwise to unsettle his mind and cool his military ardour by diverting his attention to foreign aims and objects. This is really my own view. The Army cannot afford to maintain and educate men for the Civil Service. Such a measure would be destructive of all efficiency. I also know and am ready to admit the force of the fact, that many good Governors of Colonies, or Presidencies, have been and may still be selected from the ranks of military men, whence also come Special Delegates and Commissioners.

But let me solicit your attention to the matter in the following light. Active service is comparatively rare. If amid a host of able and good men wearing Her Majesty's uniform, it be thought that some of the number could be more useful to their country than in the particular form of occupation to which they are tied by a garrison life, half-pay, perhaps even retirement—at any rate, by some not extraordinary or incomprehensible contingency, would it not be well to test them in posts where any particular merit they may have already displayed, foreshadows just the kind of efficiency required? It surely is no reflection upon the civil or diplomatic services to assume that certain appointments, at certain times, usually held by civilians or diplomatists, might be better filled by soldiers trained by nature and circumstance to the particular duties required than in the ordinary routine of departmental promotion. An Officer of the British Army in diplomatic costume, would present no more startling novelty at St. Petersburg or Constantinople, than at the less noted Tehran, at Warsaw or at Cairo; or than he would do, were he to appear in the simple uniform of his military rank at any of these cities. But as the question is one of principle, the specification of posts or places is unnecessary. If in the event of any nomination such as here contemplated, the nominee were pleasantly conscious that military training, so far from being a drawback to his usefulness, had been found a means of increasing it, the point which I have deferentially, if earnestly, pressed, would have been established.

That I have confined myself in these remarks to one branch of the State Service must be excused by the nature of the subject discussed. But I may, on the other hand, *en revanche*, take the opportunity of recording a conviction that there are civilians whom a very little practice would make not only good soldiers, but good commanders; and that judging from the events of comparatively recent years, we need not go far to find an illustration of the truth of the theory.

The CHAIRMAN: I would ask any gentleman who has heard this able and eloquent lecture to favour us with any remarks or criticisms which may occur to him.

Lt.-General Sir R. WILBRAHAM: I may perhaps be allowed to make one remark with regard to the latter part of the Lecturer's statement. I was employed for three years, attached to our embassy in Persia, and the part I rather think the lecturer has laid a little too much stress upon is, the value of information on special subjects, and especially on the feelings of the natives, that might arise from Officers residing or travelling through those countries. I was there during a very anxious time, just before the Afghan War broke out, and when Eastern affairs, though for less imminent than they are now, certainly created a much more anxious feeling throughout Europe. Lord Palmerston was then our Secretary for the Foreign Department, and Sir John McNeile was our Minister in Persia, and there was a great deal of anxiety felt at the progress of Russia in the East. But what I should

like to ask both the lecturer and our distinguished Chairman is, whether the fact of the Mutiny having broken out so unexpectedly in India does not show us how almost impossible it is for Europeans living in the most intimate way with the natives to ascertain what their real political feelings are. I do not think you can exaggerate the value topographically of our being thoroughly acquainted with these countries, but from my own experience in the East, and from reading very carefully the history of the outbreak of the Sepoy Mutiny, it does not appear to me that it is possible for Europeans to have the slightest idea of what is going on in the oriental mind.

The CHAIRMAN: As I have been appealed to on this point, perhaps you will allow me to say a few words on that and on the subject of the lecture generally. First, with regard to what has been said of the difficulty of any European ascertaining the real feelings of Asiatics, I may say that at all times, and under all circumstances, it seems to me extremely difficult for a man of one country, unless he has been living in the most intimate relations with those of another country, to interpret their real feelings as a native would. But I am quite sure that the difficulty is less in the case of military men than with those of most other professions, and if I were asked, I should say that military men, as a rule, have better opportunities, if they care to use them, in India than most other classes for knowing what the real feelings of the natives are. It is not always that their knowledge is as easily available to the Government of the country or to the public as that of other classes. There are some who, like the missionaries and merchants, have no particular reason for concealing what they know or keeping it back, who may have peculiar facilities for publishing what they know; but as regards ascertaining the feeling of the natives of the country, I should say that there is no class which has better opportunities than military men in the sort of employment for which Sir Frederic Goldsmid has argued that they are so peculiarly fitted, I mean particularly the Political Department of the Indian Government. On the two occasions to which allusion has been specially made, during the Afghan campaign and the Indian Mutiny there was always the most accurate information obtainable and obtained, and very often communicated to the Government, by military men, both those who were with their regiments and those detached from them on political duties. As a matter of experience, I can say that during the whole of both periods, when I was in India, I never failed to hear from military men what afterwards proved to be true. Unluckily, it was not always possible for this information to be laid before the Government of the country in such a convincing shape as to influence the action of the Government, but that was no defect of the observer and no fault of his. Perhaps one characteristic of the military observer which prevents his being recognised as an accurate index of native opinion is that his habits of official reticence are somewhat stricter than those of other classes. A crucial case is that of the Indian Mutiny, and I know as a matter of experience that in all three armies there were Officers who pointed out the defects which led to the Mutiny; pointed out the exact feelings of the natives, neglect of which gave bitterness to many of the actions connected with the Mutiny, and that if these men had been better known and more listened to earlier in the day, much of what happened might have been foreseen and prevented.

On the general subject of the value of military training as an education for diplomatic employment, as a civilian who for upwards of forty years has been on terms of the greatest intimacy with military men in civil employment, I can only add my testimony, such as it is, to that of the many civilian who have recorded their opinions of the inestimable value to the Empire of India of the services of military men in civil, and especially in political or diplomatic, employ. The cases to which the lecturer has referred were some of them under my own observation, more particularly in Scinde. Both the conqueror of Scinde, so well known to you all as a military man of the highest genius, and some of those who followed him—I will only now speak of those who are no longer among us, men like General Jacob and Sir James Outram, and others who might be named—I can testify that as civilians they were in no way inferior to any men that I know who were trained exclusively in civil life. There were parts of Sir Charles Napier's administration, notably I may say his police, which were perfect models of administrative capacity in their conception and in the way they were carried out. And I may mention that Sir

Charles Napier once told me that the whole of his scheme of police for Scinde, which has been more or less since adopted throughout India, was turned over and perfected in his own mind as he sat on the rocks of Cephalonia, looking at the opposite coast of Albania. He then said to himself, "If I were told, as Major Napier, "at this moment to take charge of that mountainous country, full of troublesome "spirits, how should I get to work about it?" And he said at that time, when he had one sergeant and half a dozen Greek constables as his whole police force, he elaborated in his own mind, and got ready to put down within four days, all the great features of the most perfect police system that I know. That seems to me a tolerably good instance of the way in which a soldier may at the time of his most active service, or the service which seems to be least productive of the means of self-improvement for civil education, fit himself for great civil administration. There is a point which to my mind has always seemed one of the most important with regard to the employment by the State of those of the military profession who could be brought to turn their attention to civil affairs, and that is the extremely high standard of duty which the military profession everywhere inculcates. I do not mean to say that there is not as high a standard as you could possibly have in all branches of State administration in England, but it is a great thing that you should have some of your men selected men, the best men of a profession which habitually does not look to mercantile results or rewards, which does not look for immediate payment in pounds, shillings, and pence; and the soldier, who always looks to duty as the first thing incumbent upon him, who always considers that his duty must be done whether any one is looking on and praising him, or whether he is perfectly alone, and who feels above everything his reward is to have done his duty,—he has learned the great secret of the best administrative ability that is to be obtained in a country like ours.

I think I may interpret your feelings in returning the thanks of the meeting to Sir Frederic Goldsmid for his very interesting lecture.

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## OCCASIONAL PAPERS, NOTES.

AND

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## THE AUSTRIAN ARMY IN 1875.

By Colonel Sir LUMLEY GRAHAM, Bart.

WHILST all European powers, great and small, have been more or less busily engaged in remodelling their military organization and in preparing their armies to meet the requirements of modern warfare, no one of them has been more active in this respect than Austria, and, eminently conservative though she be by nature, no other nation has, we believe, effected such radical and sweeping changes in the constitution of its forces and in its tactical system.

This is hardly to be wondered at, for, with the exception of France, no other nation has, since 1815, been exposed to such grave military disasters. The last and most serious of these misfortunes effectually roused the statesmen and soldiers of the empire to a sense of its military deficiencies, leading them to imitate, and, in some respects, go beyond the adversary who had given them such a severe shock. There was, indeed, much room for reform, and it may truly be said that Austrian military institutions have been reformed in all their branches.

In the present paper we shall devote ourselves more especially to tactical questions, and particularly as relating to infantry, making merely a passing allusion to the changes of a more general character, which have been effected in the Austrian military system, and which have been carefully analysed in the pages of that excellent periodical, the "*Revue Militaire de l'Etranger*" (January—June, 1874). It would hardly be possible to find a better guide in the prosecution of our inquiries than the one we have selected, the well-known soldier-author, Lieutenant-Colonel von Kühne, whose able and exhaustive analysis of some of the principal operations of the war of 1866 must be familiar to many of our readers ("*Kritische und unkritische Wanderingen*," &c.).

Colonel von Kühne visited Austria last summer, and attended some field exercises, also the inspections of several infantry regiments and of a field artillery regiment, near Vienna, proceeding afterwards to the camps of instruction at Bruck and Salzburg and, lastly, assisting at some divisional manœuvres which took place in the "Puster-Thal," in the Tirol, under command of Lieutenant-General Count Thun-Hohenstein, military Commandant of Tirol and Vorarlberg. The Prussian Officer, who was everywhere received with the greatest cordiality, had thus a good opportunity of studying the new tactics of the army against which he had fought so successfully a few years before, of noticing the

peculiarities of mountain warfare, unknown, except in theory, to soldiers of his nation, and of making himself acquainted with the practical working (as far as can be seen in peace-time) of the system last adopted for the defence of the rugged frontier-lands which have so often been the scene of conflict. He communicated the observations made during his tour to the "Militair-Wochenblatt," in an article<sup>1</sup> which we have before us, and of which we propose to give a short abstract, with a translation of some passages of peculiar interest.

The principal object of Colonel von Kühne's journey appears to have been to study the military arrangements in Tirol, the principal part of his pamphlet being devoted to them, and his observations upon what he saw of the Austrian Army elsewhere being given very briefly, notwithstanding which they constitute, in our opinion, not the least important part of the little work under notice, and that which will probably be of the greatest interest to the English reader.

Our author, according to the laudable practice of his countrymen, goes to the root of the matter, and, before proceeding to describe the arrangements made for the defence of the mountainous region which is the subject of his essay, prepares the way, by a dissertation, firstly, on the general characteristics of mountain districts as affecting warfare strategically and tactically; secondly, on the influence exerted by local circumstances in such regions on the employment of the different arms and the execution of military operations. His views upon these matters appear to us sound and well-stated; but, as there is nothing new or original in them, and as, to use his own words, his object in giving them is only to "recall briefly to his readers' memories 'things long since known,'" we think it advisable to pass over these prefatory chapters, so as to have more space for matter of greater interest.

The next chapter treats of the proper strength and composition of military bodies acting in a mountain region, of the importance of a local militia therein, and, lastly, of the organization of the forces in Tirol. The following remarks appear to us specially worthy of notice:—"All European powers have adopted the army corps organization, which is admirably suited to ordinary warfare, but bodies of "25,000 or 30,000 men cannot be handled to advantage in mountainous "regions; even divisions of from 12,000 to 15,000 men are too large; "and it will be found preferable, from every point of view, to break up "such formations into smaller bodies of from 3,000 to 6,000 men, chiefly "composed of infantry, but with a mountain battery and a small detach- "ment of cavalry, and to give such bodies great independence of action, "supplying each with a due proportion of transport and supplies of "every description, also with signalling and pioneer detachments, and "all necessary tools. To make each little column thoroughly self- "sufficing, as it should be, it should further be provided with pack- "animals, as well as with wheel-transport."

The inhabitants of a mountainous district (particularly when the

<sup>1</sup> "Der Krieg im Hochgebirge, die Organisation der österreichischen Wehrkräfte in Tirol und Vorarlberg und die Divisions-Uebungen in Tirol im September, 1875."

mountains attain a high elevation) are a great value for its defence, and in almost all instances of mountain warfare, they have taken an active part in the operations (witness the campaigns of 1703, 1796, 1799, and 1809, in the very regions of which we are now treating). Local knowledge and the hardness acquired in mountain life render them peculiarly fitted for performing the duties of light troops on ground which is most trying to men whose abode is in the plains. But, in order to make the most of such good material in war, previous organization in peace-time is requisite. The mountaineers must be enrolled in corps of local militia, properly officered and trained. Their presence would give the defensive force a great advantage over an invader in mountain warfare.

Inhabitants of Tirol and Vorarlberg, capable of bearing arms, have been for centuries organized for the defence of the country, and even now occupy a peculiar position in the general military scheme of the Austro-Hungarian empire.

It will probably be of interest to our readers, if we enter somewhat into details upon this subject, and, before doing so, some general remarks upon the law regulating military service throughout the empire are indispensable. The personal liability to military service of every citizen is the fundamental feature of this law. Those subject to it are enrolled in the standing army, in the war navy, or in the "Landwehr." Men joining the army or navy are retained three years in active service, passing afterwards, for seven years, into the reserve, and, in the case of soldiers, for a further term of two years into the "Landwehr," but those directly enrolled in the latter force, remain in it for twelve years. The Landsturm is composed of volunteers who do not belong to any of the other military forces. The reserve, for recruiting purposes (Ersatz-Reserve) which is calculated after ten years (reckoning from 1868), to attain the strength of one year's contingent for the army (fixed at 95,000 up to 1878), is intended to supply, immediately on the outbreak of war, a number of recruits equal to the strength of the annual levy. These men will at first be distributed amongst the dépôts, whence they will be told off to corps as required. Men of the "Ersatz-Reserve" remain liable to service in the army or navy up to the completion of their thirtieth year, after which they join the "Landwehr" for two years. The latter force is intended to support the standing army, and for internal defence in time of war, whilst in peace-time it may be used, in cases of emergency, for the maintenance of order and security. The "Landsturm" is embodied as an extreme measure, and acts as a support to the standing army, and to the "Landwehr" within the realm.

The only regiment of the standing army which is recruited in Tirol and Vorarlberg is the "Kaiser-Jäger Regiment." The Colonel is ex-officio Commandant of the recruiting district in which the corps is raised. The regiment consists of seven four-company field battalions, seven reserve companies, and one dépôt battalion, of which last only the cadres of seven companies are kept up in time of peace. The districts of Tirol and Vorarlberg having thus to furnish a relatively small contingent to the standing army are expected to contribute, in

greater proportion than the rest of the empire, to purposes of local defence, and are therefore subject to a special law for the purpose.

The first law for the organization of the Tyrolese forces was, we are told, enacted as far back as 1511, in the time of the Emperor Maximilian, since which period it has been altered more than twenty times, in order that it might be brought into harmony with existing circumstances. Many of these enactments, however, never came into force. Originally, the Tyrolese militia, or first levy, as it was called, was supposed to consist of 20,000 men, divided according to age into four classes, and only liable to be called out for a service of 100 days, but no organization was prepared in peace time, and the companies were only formed when war actually broke out, the communes usually raising the required contingent of volunteers by appeals to patriotism and to the pocket. A certain number of companies were thus made up, composed of men hurriedly scraped together, and mostly serving for the sake of the bounty, hence not the best of material. Still, the Tyrolese sharpshooters rendered good service on several occasions. Up to 1864, the Tyrolese militia continued to be raised on the voluntary principle, and the result was far from satisfactory, either in the wars of 1848 or of 1859. Long discussions upon the question ensued, resulting in an ordinance issued in 1864, which established the principle of the general liability to service, for home defence, of all inhabitants of Tirol and Vorarlberg.

The militia was by this law divided into three classes:—

1. The organized rifle companies, 6,200 men; length of service, four years.

Officers elected by the men. The latter were frequently assembled in small parties for drill, and the companies were called out, once a year, for three weeks' training.

2. The volunteer sharpshooters. No fixed establishment. Length of service, also four years, or till the conclusion of peace.

They were expected to take part in target-practice, whenever possible.

Officers elected by the men.

3. The "Landsturm," composed of all able-bodied men, between 20 and 50 years of age, and not belonging either to the army or to classes 1 or 2 of the militia.

This state of things was an improvement on what had gone before, both on account of prolonged service, of improved organization, and of the recognition of the principle of universal liability; but the election of Officers by men was maintained, a very serious defect, and moreover the arms provided were not of the best. The new organization was barely completed when the war of 1866 broke out. In the course of the campaign, 35 companies of riflemen (Landesschützen), about 4,000 men, and four companies of volunteer sharpshooters, about 2,000 men, were actively employed, being attached by Major-General Baron Kuhn, commanding in Tirol, to the demi-brigades into which he had divided his regular forces. Towards the close of the war, the Imperial Government appealed to the people "to defend their native land to the last extremity." Whereupon, 10 companies of Landsturm, about 1,500

men, were quickly raised in North Tirol, and over 2,200 men, within 48 hours, in South Tirol. According to the Austrian official account of the war of 1866, the whole local force enrolled in Tirol and Vorarlberg consisted of—

1.	8 battalions of riflemen .....	4,012 men.
2.	19 companies of volunteer sharpshooters ..	2,696 "
3.	187      "      of Landsturm .....	36,412 "
Besides	2      "      of Tirolese from Vienna .....	320 "
		_____
	Total .....	43,440

The great measure of military reform which was applied to the whole Austrian Empire by the law of December 5, 1868, could not but affect the arrangements for local defence in Tirol and Vorarlberg. Accordingly an Act was passed on December 19th, 1870, supplemented by one of May 14, 1874, for regulating the organization of militia and Landsturm, and the provisions for target practice.

The local forces are now composed as follows:—

1. The Landesschützen (Militia Rifles), who form a portion of the general Landwehr of the Empire, and are organized in peace time into ten battalions and two squadrons; four companies to the battalion. In war-time, they form ten field battalions, ten reserve battalions, ten dépôt companies, and two squadrons. The establishment of a field or reserve battalion is 23 Officers and 967 men (of whom 18 Officers and 913 men are combatants), besides 40 men trained as gunners; that of a dépôt company is 4 Officers and 236 men. In peace-time, a cadre is kept up for each rifle battalion, consisting of 1 Field Officer (Commandant), 1 Officer for administration, 4 Officers for instruction, 30 non-commissioned officers and privates.

The establishment of a squadron on the war footing is 1 Captain, 4 subalterns, 180 men.

A cadre is kept up in peace-time for the two squadrons of 1 Officer and 30 men.

This constitutes the dépôt in time of war.

The horsemen are recruited from the population of the whole district, being selected as specially apt for the particular service for which they are intended, namely, that of scouts and orderlies.

The rifle battalions are recruited:—

1. From the Army reserve and Recruiting reserve of Tirol and Vorarlberg.
2. By direct enrolment of able-bodied men of the military age who are not required for the Kaiser-Jäger Regiment.
3. From volunteers who have already served their time and are still fit for service.

The length of service is—

Two years for men who have already served their time in the standing army or in the recruiting reserve.

Twelve years for men enrolled directly in the local militia.

Two years, or for the duration of a war, for volunteers.

The Tirolese militia is in the strictest sense of the word a local

force, and can only be employed in foreign parts with the consent of the District Assembly. It is under control of the District Defence Commission (Landesverteidigungs-Oberhörde), composed partly of Government officers, partly of members of the District Assembly, the military Commandant of the district being also commanding officer of the militia.

The corps of officers is at present composed as follows:—

1. Of those already serving in the local militia, when the new regulations came into force.
2. Of officers fit for service on the pension establishment.
3. Of aspirants, natives of Tirol and Vorarlberg.
4. Of such qualified non-commissioned officers of the local militia as are able to pass the reserve officer's examination.
5. Of officers transferred from the standing army to the Mounted Rifles.

The supply of officers will be kept up:—

1. By the transfer of officers on full pay from the standing army.
2. By enrolling in the militia, or by temporarily attaching thereto reserve officers.

There is an officer's school at Innsbruck for training militia aspirants.

Non-commissioned officers and privates of the second category (see above) have, if in the infantry, to turn out for training during eight weeks, those in the Mounted Rifles, and those told off as gunners, during three months, in the course of their first year's service.

The field training of the militia rifle battalion takes place in autumn, and consists in alternate years of battalion-exercises for three weeks (battalions taking part in turn in the army corps manoeuvres), and of company drills for a fortnight, together with target practice at the communal ranges. All militia men may be called out for battalion-exercise, but only men of the second category during their first six years of service for the company drills.

Militia men (except those coming out of the army reserve) must put in an appearance at least twice a-year, for a day each time, at communal target practice.

Unless a Government range be available, each commune has to provide one at least 600 paces in length, and to keep it up, together with all necessary appliances, the State, however, supplying arms, ammunition, and equipment similar to those issued to the "Kaiser-Jäger" "Regiment." Target practice is superintended by instructors chosen from amongst the militia non-commissioned officers, and the "marks-men" (Scharfschutzen). The latter title is given to riflemen who particularly distinguish themselves in shooting, and confers certain privileges, the most important being extra pay when on service, and dispensation from attending target practice unless as instructor.

When embodied, militia men are on the same footing as the line as regards pay, pensions, &c.

Militia men cannot emigrate without permission.

Every inhabitant of Tirol, unless in the standing army or militia, is liable for service in the Landsturm from his nineteenth to his forty-

sixth year. The first levy consists of the younger classes up to forty years of age, its members being bound to serve both in their own and the neighbouring districts; the older men, on the other hand, who compose the second levy, can only be called upon to serve in their own districts. Landsturm men cannot be embodied for more than fourteen days at a time. Men liable for service in the Landsturm are already in peace-time enrolled in sections by the communal authorities. These will afterwards be organized into companies and battalions.

A company must not be less than 150 men, nor exceed 300. Battalions must be between 500 and 1,000 strong.

(In other parts of the empire the Landsturm is still to be recruited by voluntary enlistment alone, and no provisions for its formation are made in peace-time.)

The officers will be elected when war is imminent. Section-leaders by the men of their sections, the choice being limited to those who have been officers or sergeants in the "Kaiser-Jäger Regiment." Section-leaders will choose the captains; these again the major, quartermaster, surgeon, and chaplain. The choice of major is subject to the veto of the Defence Commission.

Both officers and men wear their ordinary clothing, with a light green arm-band, having on it the battalion number. Arms, ammunition, and equipment, are provided by the State.

The regulations for target-practice form an important part of the scheme of defence for Tirol and Vorarlberg, being calculated to prepare and work up the elements of a defensive force without actual military organization. This applies more particularly to the Landsturm. The formation of rifle clubs, under sanction of the authorities, is encouraged. A club must consist of at least twenty members, each of whom must take part in at least three practices of individual firing annually with his own club, besides a practice of rapid independent firing. Ranges, &c., are kept up at the expense of the club, which, however, receives an allowance from the State, also money prizes for encouragement of good shooting. Practice is carried on according to army regulations. The members of each club choose from amongst themselves two officers to preside at the ranges, also a committee of management. The whole system of target-practice is under the Defence Commission, the rifle clubs of Tirol and Vorarlberg being respectively under general superintendence of an officer called the "Landes-ober-Schützenmeister," which title we will leave it to the reader to translate. There is an annual "grand national rifle meeting" (Landes-Fest und Freischiessen) at Innsbruck, Botzen, Trient, and Bregenz in turn, supported partly by State funds, partly by local contributions.

The system of defence thus briefly described is evidently a great improvement upon any system before in force in Tirol. It has not, however, as yet been long enough in operation to be carried out in all its details, and as its successful working depends much upon voluntary effort, the active sympathy of all officials, and indeed of the whole population, must be enlisted in its favour. Much depends upon the military commandant, who is also, *ex officio*, a member of the

Defence Commission and commanding officer of the militia. It is of great importance, particularly during the present period of transition, that this post should be filled by an officer of tact, energy, and vigour, moreover, one acquainted with the people, and popular. The Austrian Government appears to have made a good selection in Lieut.-General Count Thun-Hohenstein, the present commandant.

It is to be hoped that he will be supplied with sufficient funds to carry out the system in all its integrity. It would be false economy not to do so, but to such false economy there seems to be unfortunately some tendency in Austria.

The war strength of the militia rifles (*Landesschützen*) is estimated at about 20,000, about the same in point of numbers as the first levy of the old Tyrolese force, but their efficiency should be far superior to that of the latter, which until quite of late years received no military training whatever, was badly equipped, and only bound to serve 100 days.

Colonel v. Khüne says, that he was unable to ascertain the exact number of enrolled militia men, or how far battalions and companies had been exercised, but that he was convinced from what he heard and saw, that in case of war, ten field and ten reserve battalions, fairly trained and thoroughly well equipped, would be turned out available for service at the shortest notice, whereas in the war of 1866 Baron Kuhn could only dispose at first of 4,500 men between militia and volunteers, their total strength actually in the field never quite attaining 7,000.

Besides which, the Landsturm is now in course of organization.

The divisions which took part in the manœuvres of 1875 was composed as follows:—

1. Standing army—

The Kaiser-Jäger Regiment (Tyrolese Rifles) ..	8	battalions.
7th Regiment of Infantry .. .. ..	3	"
53rd     "     " .. .. ..	3	"
9th Garrison Artillery battalion .. ..	3	mountain batteries.
1 Section for Signalling.		
1 Section for Hospital Corps.		

2. Militia—

The Rifle battalion of Bruneck .. .. ..	1	battalion.
A detachment of Mounted Rifles .. .. ..	50	horsemen.

The militia battalion only took part in one day's manœuvres.

As already mentioned, the Kaiser-Jäger Regiment furnished eight battalions to the manœuvring force. Two of these were, however, provisional battalions formed out of the reserve companies; one of the seven field battalions of which the regiment is composed being in garrison at Hainburg,

The Austrian infantry peace establishment is very small, too small for efficiency, that of the Kaiser-Jäger being 80 rank and file per company, that of the line regiments, only 70. The 53rd Regiment was particularly weak, having suffered much from dysentery, and its

companies did not turn out more than from 40 to 50 men. (It should be remembered that Austrian battalions have only four companies).

A mountain battery has both in peace and war four rifled three-pounders. Its peace establishment amounts to 4 officers, 40 men, 9 pack-animals, and 4 riding horses; in war there are 48 pack-animals and two country waggons, or 63 pack-animals, where there are no carriageable roads.

They carry 120 rounds per gun. Each animal has to transport about 280 pounds (English) weight. The ammunition consists of common shell, shrapnel, and canister. The effective range with shell does not exceed 1,000 paces.

Great attention has been made to signalling in the Austrian service. At the manœuvres in question, large white triangles and white disks were used instead of the various coloured flags formerly employed.

The troops never once bivouacked, but were always quartered on the inhabitants. Provisions were obtained by contract. The meats were cooked in portable camp kitchens. The manœuvres lasted four days, a day of rest intervening between the second and third. The scene of operations was the district known by the general name of "Pusterthal" (Puster valley), a district really composed of two valleys divided by a small and nearly flat plateau elevated about 4,000 feet above the sea, and forming the water parting between the basins of the Drau (or Drave), and the Etsch (or Adige), the former of which flows to the Euxine, the latter to the Adriatic.

Both the valleys and the intervening plateau are well cultivated, and the former contain several villages and the town of Bruneck. The Pusterthal is of considerable strategical importance, affording the most convenient means of communication between Tirol and Carinthia, both by road and rail. The mountains which enclose it are of varied formation and are much intersected by ravines, valleys, and water-courses. The Pusterthal and its vicinity afford some good tactical positions and appear well suited to the practice of mountain warfare.

In Colonel v. Kühne's pamphlet, will be found a good map and a minute description of the district, also a careful account, followed by a critique of each day's operations.

Our space will not admit even of an abridgement of these instructive chapters, and we must content ourselves with some quotations from the author's final remarks upon the operations generally.

The division was formed daily into an eastern and a western force which acted against one another. The operations of each day were entirely independent of those which preceded and followed them, no general strategical idea being worked out, as at Prussian manœuvres.

Hardly any instruction was given in outpost duty, no pickets being posted by night.

The object of the manœuvres was mere tactical instruction, to which, when you consider the nature of the country, it was judicious and perhaps inevitable to confine them, as to work out a strategical idea a much larger field of operations must have been traversed, and turning movements in such a region being necessarily widely extended

and slow, more time would have been required than was available. The want of practice in outpost duty and in forming bivouacks, appears to have been a serious omission from the programme, and to have been due, in great measure, to considerations of economy, which in such a matter can only be misplaced.

The general and special ideas for each day's manœuvres were given out daily on parade, orders consequent thereupon being issued verbally on the ground. It is well that Commanding Officers should be accustomed to do this, but the habit of reducing an order to writing should also be cultivated, as to do so clearly and at the same time briefly, is by no means easy.

The map issued for the manœuvres was on a very small scale; 1 : 144,000, and was based on old surveys requiring much correction. The Austrian military authorities prefer this small scale, because they think it would be inconvenient to Officers to carry about larger maps on service. The Prussian Army, however, during the late war was provided with maps of France on the scale of 1 : 80,000, and the troops investing Paris received maps of the environs on the scale of 1 : 20,000. (The one-inch scale chiefly in use in the British Army is, of course, as 1 : 63,360).

The following remarks upon the different arms, of which we give a summary, are founded, not only upon what the author saw in Tirol, but upon the observations which he had the opportunity of making elsewhere.

Austrian regiments differ very much from one another, both in the bearing of the men and in their tactical efficiency. This is intelligible when we take into account the great variety of nationalities to be found in the Imperial Army, and, consequently, the great number of dialects spoken therein.

Colonel v. Kühne thinks that the regiments recruited in the German provinces are the best drilled, and remarks that this is not to be wondered at, seeing that the great majority of Officers throughout the Army are of German nationality; and though there are probably more good linguists in the Austrian Army than in any other, Officers being required by regulation to know enough of the language or *languages* of their men (for sometimes three or four different tongues are spoken in the same corps) to be able to communicate with them on matters of duty, yet, it is evident that under such circumstances, instruction is likely to be incomplete, and all the more so on account of the short term of service.

#### *The Infantry.*

The Kaiser-Jäger regiment distinguished itself particularly amongst those in the Pusterthal. It has the advantage, as already stated, of being recruited in Tirol and Vorarlberg, where the material is excellent. Fine upright men, strong and active, capital marchers, and inured to mountain work.

Whilst tactical reform in the Prussian Army has been progressing upon the principle of "Festina lente," the conservative spirit of the

higher military authorities having acted as a drag upon any rapid advance, in Austria the tendency has rather been to go into extremes.

In the former country, the last new regulations are only a reprint with emendations (considerable 'tis true) of those of 1847, which again are founded upon those of 1812, whilst Austrian Officers of the higher ranks have in their time had to make themselves acquainted with five or six "Field-exercise" -books differing considerably from one another. The one at present in force appears quite up to the times, perhaps even going too far in some matters. For instance, having wisely concluded that the gigantic losses of 1866 were due quite as much to a mistaken system of tactics, founded upon the action of masses and upon the shock, as to the superior armament of their enemy, Austrian tacticians ran into the extreme, not only of forbidding mass-formations in action, but also any sort of bayonet-charge, unless under very exceptional circumstances. They appear to think that positions may be carried by fire alone, the skirmishers shooting their way up to the enemy and pouring into him a heavy and rapid fire at close quarters.

In consequence of this, the attacks of Austrian Infantry seem to be tamely executed.

"It is all very well to show no masses until you come to the actual "onslaught, to the final rush, but at that moment the assailant cannot "do without them and must put up with the losses which are in- "evitable when they are employed."

When on the defensive, the same false principle naturally made itself apparent.

Troops in position retired without waiting for any positive attack as soon as the assailant was supposed to have fired sufficiently long and heavily. The author quotes the following passage from the latest edition of the "Field Exercise," to show how little reliance is now placed upon the bayonet, the use of which was, as we know, so strongly advocated in the period between 1859 and 1866.

"The bayonet attack must only be employed, as an extreme measure, "to drive an enemy from his position when the latter has been com- "pletely surprised, or when he has been so thoroughly shaken by fire "that he cannot be expected to offer further resistance, or when to "remain any longer in the effective zone of fire, would seem to promise "a heavier loss to the assailant than would a vigorous advance. It "will, therefore, not be judicious, leaving the idea of surprise out of "the question, to order a charge until your fire has obtained its greatest "degree of intensity.<sup>1</sup> Still less excusable would it be to ground "your dispositions for attack upon a bayonet-charge. This should, "on the contrary, only be the natural consequence of the effect pro- "duced by the greatest possible development of fire."

It is with the last two sentences that the Prussian critic and we also are chiefly inclined to quarrel, for, however requisite it may be to prepare the way for an attack upon good troops well posted and armed

<sup>1</sup> The principle advocated in this sentence, at least, appears to be both sound and to have been recognized as a maxim by all European armies, including that of North Germany.

with breech-loaders, by the utmost development of artillery and rifle-fire, yet such troops will not be dislodged by fire alone, and resort must finally be had to the bayonet, upon the use of which, therefore, as an *ultima ratio*, all our dispositions for attack should be grounded. We are disposed the more to insist upon this, because we think that many of our own tacticians are inclined to favour the false maxims as to attack noticed as prevalent in Austria.

The Austrians wisely lay great stress upon the careful use of cover to shelter troops from fire, but, says von Kühne, "this must not be carried to the pitch of avoiding open ground, where the tactical situation positively requires it to be traversed. One can't always choose one's own ground, witness Spicheren and St. Privat; and we must, therefore, accustom our infantry to cross ground unfavourable to the attack in the most suitable formation and in the most practical manner. We remarked, however, on frequent occasions, that Commanding Officers appeared to make dispositions for the attack out of keeping with the general situation, solely for the purpose of avoiding open ground. We cannot, moreover, see any advantage in the practice of making skirmishers run over this sort of ground in a stooping attitude. It is very doubtful whether they gain thereby the advantage of better cover, and there is no doubt that their advance is retarded and their *morale* impaired by the practice. Another thing struck us pretty often. They appeared to extend their front too much with the idea of making the most of their fire. The line of skirmishers, long and unwieldy, was not properly backed up by reserves in close order; commanders seeming in general to let their troops get out of hand too soon. When each side aims at outflanking and turning the other, the tendency to undue extension is only too easily developed, and it seems, therefore, advisable to combat this tendency by assuming a deeper formation. The importance of keeping a reserve in hand for the final crisis must also not be lost sight of in presence of the fire-arms now in use. Lines of skirmishers were often to be seen firing into one another for a long time at too close quarters, supports also approaching too close to the line of fire in open ground."<sup>1</sup>

There are two very remarkable peculiarities in the new Austrian tactics:—

1. The importance given to the "Zug" as a sub-unit. The captain handles his company like a little battalion, giving only the cautions, while the Zug leaders give the executive words of command. The Zug is not confined to its original position in the company any more than is the latter to its original position in the battalion.

2. The so-called "Vorwärts-sammeln" (forward gathering).

Bodies of troops, either in close or open order, are taught to avoid loss, in crossing dangerous ground to gain a forward position, by practising themselves to do so, the men being trained to rush or creep across either individually or by files. After the party is re-assembled under cover, the forward movement is re-commenced anew in the

<sup>1</sup> These unrealities are common enough at "sham fights" in all countries, not excepting Prussia.

same manner, the point of assembly being each time indicated by the commander. Colonel v. Kühne thinks that the Austrian Officers and soldiers do not yet enter into the spirit of the thing, and remarks that the movement was generally performed by the successive advance of Schwärme (groups) or of Züge (divisions)<sup>1</sup> very much after the fashion practised for some time back in Prussia and now adopted in most armies; moreover that this mode of advance was often employed when not required by circumstances, thus causing needless delay, and that it was often omitted when it would have been clearly of advantage. The supports moved too often up to the skirmishing line to fire volleys, and the said firing was frequently kept up too long. Colonel v. Kühne counted on one occasion eighteen such volleys fired one after the other. A very unnatural performance. The practice, too, of making men take ground to a flank, when in the skirmishing line, or immediately behind it, for the purpose of avoiding intermixture of units was frequently noticed and is strongly to be reprehended, as such a practice must necessarily be given up on actual service on account of the heavy losses which it would entail without any commensurate gain.

The Prussian observer, although making the above depreciatory remarks, was upon the whole favourably impressed by what he saw of Austrian infantry. They are well-drilled and their "fire-discipline," is very good. They have made remarkable progress in all respects within the last few years, and the steady, quiet manner in which they manoeuvre, is remarkable.

"Not a sound was to be heard except the words of command and "the shrill notes of the whistle, and we often noticed how a shout from "the commander and a wave of his sword sufficed to lead a 'zug' "smartly from one position to another. They have worked hard and "well, and already much has been done."

The men seem to be well trained in the minor operations of war. Patroles were well conducted, and gave good information, though German-speaking men were not always to be found. This is very inconvenient, but an inevitable evil in the Austrian army. One very good practice was noticed. Each captain and "zug"-leader in the skirmishing line kept two or three men about him to carry orders and messages. (This institution, and also that of the whistle, used only to call attention, might be introduced with advantage into our service as a means of facilitating the direction of long lines of skirmishers, or of half-companies, distributed as in our new formation for attack).

The Austrian "Konzentrierte Ausstellung," answering to the

<sup>1</sup> The company is sub-divided into Züge and Schwärme. There are four Züge in a company.

The number of Schwärme in a Zug depends on the strength of the latter. The Schwärme must not consist of less than four, or of more than seven files.

The Austrian peace establishment is so low that it renders the Schwärme and Zug identical.

We saw the "Vorwärts-Sammeln" practised in our own army many years ago, long before the practice was adopted in Austria. But it was not sanctioned by authority, and was only, as far as we know, practised by one corps, the 2nd battalion 19th regiment, whose commanding officer, Colonel R. Warden, was, as a tactician, far in advance of his age.

“Rendezvous Stellung” of the Prussians, or to our own “line of quarter-columns,” is worthy of notice. It consists of battalions formed in line of company-columns. Distance between the company-divisions (*züge*), 6 paces; interval between companies, 3 paces; interval between battalions, 12 paces. A regiment of three battalions advances to the attack in the following order:—

No. 1 battalion, with its four companies in line, or in line of company-columns, the leading division of each company skirmishing. The movement is continued without a check up to within some 400 or 500 paces of the supposed enemy, the skirmishing line being meanwhile reinforced by the second division of each company. The supports follow close behind the skirmishers, generally remaining in column.

Nos. 2 and 3 battalions follow the movement, either in the “concentrated” order above described, or in “line of columns,” *i.e.*, line of company-columns at deploying intervals plus 3 paces. During the advance of the leading battalion and the subsequent standing-fire which it maintains at a distance of from 400 or 500 yards from the enemy, the other two battalions gain ground upon it and move up to the front, as a rule simultaneously, one prolonging the line, the other acting on the flank of the enemy. It is rare to see one of the battalions kept back in reserve.

The further advance to within about 100 yards of the enemy is executed by the “forward-gathering” process already described, the skirmishers being seldom reinforced by the third divisions of companies. As a general rule, these, together with the fourth divisions, move close up to the skirmishers, deploy, and fire a great many volleys.

“A little before the assault the fire is increased to the utmost: rapid “independent firing from the skirmishers, volleys from the supports. “The assault itself is executed by only a portion of the line, covered “by the fire of the remainder, bugles sounding the advance, skirmishers and supports rushing on with loud hurrahs. At this moment “no reserves are kept in hand, not even bodies of any strength in “second line. Fire is kept up on the retreating enemy in a very effective manner.”

The Prussian observer, when comparing Austrian infantry with that of his native land, was struck by the comparative looseness of the former, in drill and appearance, to a certain extent also in discipline, at least as regards externals. “Smariness” and “pipeclay” (*zopfwesen*) seem to have been discarded in Austria together with the old white tunic. But, on the other hand, the free movements, the long, easy stride, the quick step, did not fail to impress the looker on favourably.<sup>1</sup> Even the lively swing of the left arm in marching, at first annoying to an eye accustomed to Prussian parade-stiffness, was admired after a time, because in keeping with the rest. Many things in every army strike a foreign observer unpleasantly, because he is unaccustomed to them, but he must not conclude that a practice is bad merely because unfamiliar to him. What is suited to the genius of one army and

<sup>1</sup> Really, however, the Germans seem to get over more ground in a given time than the Austrians. In an article in the 179th number of the “Revue Militaire de

nation may be totally unsuitable to others. Thus in substance says v. Kühne, and further adds:—

“ Notwithstanding some things which at first sight struck us unpleasantly, we were always and everywhere impressed with the conviction that we had before us an ancient and well-disciplined army, ‘inspired by glorious traditions.’ ”

### *The Cavalry.*

Colonel v. Kühne only had the opportunity of seeing two cavalry regiments manoeuvre, one against the other, at Bruck. He was very favourably impressed by what he saw, and speaks in high terms of the way in which the regiments were handled under trying circumstances and in difficult ground. They also marched past very well at the trot in columns of divisions.

As with the infantry, trumpet-calls and words of command were reduced to a minimum. The horses were small, compact, and in excellent condition.

### *Artillery.*

The Prussian Colonel had the good fortune to see the inspection of a field artillery regiment by the Emperor.

It was drawn up in line at close intervals, *i.e.*, with 20 paces between divisions, 10 paces between batteries, and 6 paces between guns. Divisions, of which there are 4 in the regiment, consist of 3 batteries, the latter of 4 guns. There were consequently 48 guns on parade, 4-pounders all drawn by 4 horses, 8-pounders by six. The gunners were all seated, three on the limber, two on the gun-carriage. The batteries were well turned out; horses in good condition and well groomed, though rather small.

The movements were well executed, quickly and with great steadiness. The mountain batteries which took part in the manoeuvres in Pusterthal are described as having shown on the whole great efficiency, but their effective range and the power of their projectiles (in other

“l’Etranger” on “Le Nouveau Règlement d’Exercices de l’Infanterie Autrichienne” we find the following details:—

Pas habituel de route. Quick step (E).	Number of paces per minute.	Length of pace.	Pas gymnastique (F). Der Trab (Pr). Laufschritt (Au). Double (E).	Number of paces per minute.	Length of pace.
		m.			m.
France .....	110	0.65	France.....	170	0.80
Germany .....	112	0.80	Germany.....	165	0.88
Austria.....	115	0.75	Austria.....	155	0.90
Italy.....	120	0.75	Italy .....	170	0.90

N.B.—Length of pace is given in decimals of the mètre.  
Reducing the English inch to the decimal of a mètre we arrive at the following:—

England .....	116	0.76	England .....	165	0.82
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words, their weight and calibre) require increase to enable them to hold their own against the small arms now in use; but already we are told that: "The want of mobility of the guns is a serious drawback, often causing delay to the movements of the infantry, for when the pack animals are in use, the battery cannot move out of a walk. It is very difficult to get the mules down hill, consequently guns must often be withdrawn from action sooner than is desirable, for fear of capture."<sup>1</sup>

*The Militia—Rifles.*

The militia battalion, which went through its training at Bruneck, and took part in the manœuvres for one day, produced a very good impression. The men were clothed, equipped, and armed strictly according to regulations, and turned out very smartly. They attended the manœuvres without knapsack, mess-tins, or cloak. No opinion could, however, be formed as to their tactical efficiency, as they were employed entirely on one flank in a thick wood. If the share taken by the Tyrolean militia in the autumn-manœuvres is confined to the employment of one battalion annually for a single day, it must be confessed that the amount of experience acquired in field operations cannot be great. Is the small amount of training of this kind given to the local force due to the same motives of economy which otherwise, as we have seen, tend to impair the efficiency of the Austrian army?

*The Mounted Rifles.*

Tirol and Vorarlberg naturally do not furnish an extensive field for cavalry recruiting. These districts can, however, easily supply fit subjects enough to fill up the two field squadrons. They made a very good show, intelligent-looking men and bold riders. Seeing, however, that the mounted rifles are, in the wording of the regulation, "intended for the duties of orderlies and scouts," they seemed to take rather too active a part in the fighting. They skirmished about so much, both on horse and foot, that had bullets been flying about, few of them would have survived the campaign. You cannot fairly expect a detachment of mounted rifles to perform all the functions of divisional cavalry, and therefore it would have been better, instead of sending all disposable mounted men to the front, as was generally done, to push forward a mere patrol of half-a-dozen horsemen. However, though no commander would be justified in war in employing this force as extensively as was done in Tirol in 1875, the use made of them may still have been judicious at "peace-manœuvres," "the object being to give as many of them as possible the opportunity of seeing, observing, and reporting, of accustoming themselves to act with large bodies of men, of making themselves acquainted with the ground, and lastly of gaining confidence and self-respect. Their reports were always clear and to the point. The very nickname of 'glacier hussars,' given them by the other soldiers, was a striking recognition of their efficiency even in the most difficult ground and of their daring horsemanship."

<sup>1</sup> The whole *matériel* of the Austrian artillery is now in course of transformation, the new metal invented by General Uchatius having been adopted.

Colonel v. Kühne concludes the instructive essay, of which we have endeavoured to give a summary, with the following eloquent passage, which we will translate:—

“ We have the good fortune to belong to an army, every Officer, nay “ every man, of which, bears in his bosom the conviction that it owes its “ glory, and, we may say so without indiscretion, its greatness, to “ nothing so much as to the personal efforts of its princes and sovereigns. “ Inspired as we are with this feeling, and having had the honour “ and good fortune of being immediate witnesses of the very great “ interest taken in the Austro-Hungarian army by its Imperial Chief, “ and having, moreover, noticed the great zeal for the service displayed “ by Officers and men on all occasions, we think that we may be per- “ mitted to express our opinion that a bright future is in store for that “ army. May it be our lot to encounter it only as friends! ”

## THE MEDICAL DEPARTMENT OF THE GERMAN ARMY IN PEACE AND WAR.

By Surgeon-Major T. W. Fox, R.E.

THE Emperor of Germany, as a proof of his satisfaction with the services rendered by this department during the late war, approved of a new organization of the Medical Corps, under date, 6th February 1873. For information on this subject we are indebted to that valuable publication "Revue Militaire de l'Etranger," Nos. 289, 290, which bases its articles on a voluminous work, "Das Preussische "Militär-Medicinal-Wesen in Systematischer Darstellung," by Dr. Prager, Oberstabsarzt, and also to "Militair Wochentblatt," 13th April, 1873, 4th September, 1875.

By these regulations, no medical man can serve as a military surgeon who has not served six months in the ranks (*mit der Waffe*), the young surgeon may then serve for six months more, as a medical volunteer, to complete his one year of obligatory service, provided he can produce certificates from his commanding officer of good conduct, attention to duty, character and intelligence. The medical men among the one-year volunteers<sup>1</sup> are permitted to postpone their year of service until they are twenty-three years of age. They have then the choice of serving one year in the ranks, and for another six months in the ranks as soldiers, and for another six months as military surgeons, under the conditions already stated.

It is requisite, in the first place, in order to appreciate the machinery of mobilisation, to know the data of the problem; on the one hand, the existing resources (the active and auxiliary cadres); on the other, the numbers necessary to raise these to a war-footing.

It is only when these premises are laid down, that the means taken to meet with the resources available, the needs of mobilisation, can be advantageously studied.

### I.—THE CADRE OF THE MEDICAL DEPARTMENT IN TIME OF PEACE.

#### (a.) *Superior Medical Officers.*

Of the eighteen army corps of which the German army is composed since the war of 1870—1871, there are fourteen which are included in the Prussian budget, whereas the 12th and 13th corps (Saxony and Wurtemberg), the two Bavarian corps, and the Brunswick Contingent adhere to their own arrangements.

<sup>1</sup> Germans possessing a certain amount of education, permitted on certain conditions to serve for one year instead of three years with the colours.

The Prussian cadre of the medical department on the peace establishment, according to the warrant published on 25th January, 1872, by the medical department of the Ministry for War is composed as follows :—

1 surgeon-major-general of the army (director-general) ;

16 surgeons-general, of whom 14 are surgeons general of army corps : one is attached to the medical department of the War Office ; one is deputy-director of army medical schools ;

244 principal surgeons for 114 regiments of infantry, 72 regiments of cavalry, 28 regiments of artillery, 19 fortresses of the first class ; 1 for the invalids', 1 for the cadets' school at Berlin, and 2 for the medical department of the War Office.

351 surgeons-major, 228 for infantry battalions, 14 for rifle battalions, 5 for the school of non-commissioned officers.

41 for field-artillery, 14 for pioneers, one for the railway battalion,<sup>1</sup> 1 for the 35th battalion of Landwehr.

21 for fortresses of the 2nd class.

20 for the army medical schools, and 6 for the provincial schools of cadets.

(b.) *Subaltern Surgeons.*

This category of surgeons, which comprises assistant and sub-assistant surgeons, and the one-year medical volunteers, has a strength varying with the number of volunteers, the number amounting usually to nearly 700.

(c.) *Hospital Orderlies (who are to be practically instructed in the Field Hospitals).*

Their number is one per company of infantry or rifles, per battalion of train, per squadron of cavalry, battery of artillery, company of pioneers.

The total strength is therefore not less than 2,500 men on the peace establishment.

(d.) *Hospital Assistants (Dressers).*

Since 1863, the State requires each army corps to instruct in their field hospitals 26 military hospital assistants taken from soldiers of infantry who have completed one year's service, making a total of 377 men for the  $14\frac{1}{2}$  army corps which appear in the Prussian budget.

(e.) *Apothecaries.*

The peace establishment includes one principal apothecary attached to the director-general of the medical department, one senior apothecary attached to each surgeon-general of army corps, and about 150 junior apothecaries attached to the hospitals in the proportion of one for a hospital for 2 to 5 battalions, two for one for 6 to 10 battalions, three for one for more than 10 battalions.

Thus, to conclude, the strength of the Medical Corps on a peace footing amounts to—

<sup>1</sup> The conversion of this battalion into a regiment necessitates an augmentation of the cadre of the Medical Corps.

- 1 director-general (médecin-major-general).
- 16 surgeons-general.
- 244 principal surgeons.
- 351 surgeons-major.
- 700 junior surgeons (médecins subalternes), including sub-assistant-surgeons and the one-year surgeon-volunteers.
- 165 apothecaries.
- 2,500 hospital orderlies.
- 546 hospital assistants.

## II.—STRENGTH OF THE MEDICAL CORPS ON A WAR FOOTING.

### (a). *Superior Surgeons.*

On the subject of the effective strength of superior (or senior) surgeons required for mobilization, or in war time, a few general data only can be given. It is evident that the normal peace establishment is insufficient for the needs of war. This normal strength is so much more insufficient, since in time of peace the framework, basis, or "cadre" of every kind of formation required in war time is not kept up, such as chief or principal medical officer at head-quarters of the army, principal medical officers of army corps, surgeons-general of military routes (étapes), surgeons consultant-general, surgeons of divisions, directors of field hospitals of army corps, surgeons of camp hospitals, of home hospitals (*de l'intérieur*), surgeons of sanitary detachments, &c.

It is requisite, therefore, to have recourse for field services to the surgeons of the Beurlaubtenstand,<sup>1</sup> even to the military surgeons on retired pay, or to those still available for service (*à la disposition*), and also to civil surgeons not liable for military service.

Counting the figures necessary for a single army corps, without reckoning superior appointments, the requirements are as follows:

2 surgeons-general, 1 for service in the field (*mobilisé*), 1 for home service (territorial).

2 divisional surgeons.

The director of the hospitals of the army corps.

Principal surgeons of 12 field hospitals.

6 surgeons-major of sanitary detachments.

Surgeons-major of the personal reserve.

Principal surgeons of established war hospitals.

Surgeons-major of military étape (routes), and of commissions of transfer.

Senior surgeons of the troops, mobilized in the same number as those assigned to corps by the peace-establishment, except the principal surgeon of a divisional regiment of artillery, and the surgeon-major of a battalion of pioneers, both of whom become available for other duties by the breaking up of their corps, in consequence of mobilization.

<sup>1</sup> The Beurlaubtenstand is composed mainly of men who have served with the colours, and are in the reserve or Landwehr, from the fourth to the twelfth year of service inclusive.

Surgeons-major of battalions, and for replacing casualties (reinforcement).

Chief surgeons of fortress.

Surgeons of schools of cadets and of other military establishments.

Principal and practising surgeons, *i.e.*, the chief surgeon and those in charge of the patients in the hospitals at home.

Surgeons-major of garrison troops and of corps of "Landwehr."

(b.) *Subaltern Surgeons.*

The numbers of assistant-surgeons required on a war-footing are—

1 assistant-surgeon attached to the surgeon-in-chief of the army; to each surgeon-general of army corps, or of "établis"; to each battalion of infantry and rifles; company of pioneers; bridge train; company of construction of railways; section of field-telegraph; to the staff of each division of ammunition-columns and auxiliary-supply columns; each battalion of foot-artillery, including the Landwehr; dépôt battalion of infantry; dépôt company of rifles and of pioneers; dépôt division of artillery; of the railway battalion of military train; and each commandant of the line.

2 junior surgeons to each regiment of cavalry of the line, of Landwehr, or of garrison, to columns of ammunition of each army corps, to each group of 100 patients in the hospitals at home.

3 junior surgeons to the staff of each battalion of train mobilized, to each field hospital.

4 junior surgeons to the staff of each of the 2 of the field-artillery regiments of each army corps.

5 junior surgeons to each sanitary detachment.

9 junior surgeons to the hospital reserve of each corps.

(c.) *Hospital Orderlies.*

Up to the year 1869, the number of hospital orderlies required by an army corps on a war-footing amounted at first to 316, subsequently to 350. In 1869, the number was raised to 441 or 511 for army corps, according to their effective strength; about 6,148 for the Northern Confederation. At the present time, this number would be insufficient, and the strength must be calculated so as to allow—

1 hospital orderly for each company, squadron, battery, or ammunition column of the army in the field, and the troops of reserve, relief, or of garrisons; for each surgeon-general of corps; director of hospitals; consulting surgeon; divisional surgeons; also for each construction company, or each railway field division.

2 hospital orderlies for each surgeon-in-chief, and for the division of the dépôt of the railway battalion.

3 hospital orderlies for the division detachment of relief of the train battalion.

4 hospital orderlies for the surgeon-in-chief of the army, and for each reserve dépôt of hospitals.

8 hospital orderlies for each sanitary detachment.

9 hospital orderlies for each field hospital.

27 hospital orderlies for a hospital reserve of each army corps.

Lastly, in the hospitals at home, 3 hospital orderlies for each group of 100 patients.

(d.) *Hospital Assistants.*

For the troops immediately mobilized, the following are required by each army corps:—

204 hospital assistants (dressers), 24 for the 3 sanitary detachments, 144 for 12 hospitals, 36 for the hospital reserve. For the home hospitals must be reckoned in addition 6 dressers for each 100 patients.

(e.) *Apothecaries.*

The numbers required for each army corps are thus laid down—  
2 senior apothecaries (one for field, one for home service).

19 field apothecaries attached to the three sanitary detachments, to 12 field hospitals, to the hospital reserves' dépôt, in the proportion of 1 for each establishment, but 2 in the hospital reserve.

Moreover, each home hospital receives 1 apothecary for each group of 400 patients.

To give an idea of the numbers required for the mobilization of the medical corps of the Northern Confederation (12½ corps) in 1870—71.

1. *Part of the Army immediately Mobilized.*

4 surgeons-general (surgeons-general of the active army).

24 surgeons-general (7 surgeons-general and 17 principal surgeons of the active army).

32 divisional surgeons (principal surgeons of the active army).

13 directors of hospitals (12 principal surgeons from the active list and 1 recalled from the reserve).

152 chief surgeons of field hospitals (105 principal surgeons and 45 surgeons-major on the active list, 2 surgeons-major of Beurlaubtenstand).

568 surgeons-major (94 surgeons-major, 58 assistant-surgeons from the active list, 163 surgeons-major, and 222 assistant-surgeons from the reserve Beurlaubtenstand).

2 surgeons-major and 12 assistant-surgeons from surgeons not liable for military service, 17 vacancies.

1,587 subaltern surgeons (311 assistant and sub-assistant, and 202 one-year volunteers from the active list), 619 assistant-surgeons and sub-assistants from the Beurlaubtenstand, of which 12 had served in the ranks (mit der Waffe); 31 reservists of the ersatz reserve; 20 assistant surgeons and sub-assistants not liable for service.

58 pupils of the medical corps, 330 medical students who have passed their seventh half-year of study, of whom 8 are not liable for service, 16 vacancies.

11 consulting-surgeons (1 surgeon-general on the active list, 5 surgeons-general of Beurlaubtenstand, 5 surgeons not liable for service).

72 practising surgeons, of whom 52 are not liable for service; 20 foreigners.

152 assistant-surgeons, 52 not liable for service; 18 students of 7 or 8 half-years' standing; 57 foreigners.

*2. Part of the Army subsequently Mobilized.*

12 surgeons-general (3 general, 7 principal surgeons on the active list, 1 general, 1 principal surgeon recalled).

30 principal surgeons (17 principal surgeons, 6 surgeons-major on the active list, 1 surgeon-major of Beurlaubtenstand, 1 surgeon-general, 5 principal surgeons recalled).

391 surgeons-major (14 surgeons-major and 9 assistant-surgeons on the active list, 44 surgeons-major, and 145 assistant-surgeons of Beurlaubtenstand, 17 surgeons-major, and 8 assistant-surgeons recalled to the active list, 16 assistant-surgeons not liable for service, 138 vacancies).

610 subaltern surgeons (16 assistant-surgeons and sub-assistants, and 36 one-year volunteers of the active service, 106 assistant-surgeons of the Beurlaubtenstand, of whom two had served in the ranks and 41 came from the Ersatz Reserve,<sup>1</sup> 4 assistant-surgeons recalled to the active list, 4 not liable for service, 2 medical corps students, 409 surgeons liable to service, 18 surgeons of the Ersatz Reserve, 7 surgeons not liable for service, 1 vacancy).

8 consulting surgeons (not liable for service).

Reckoning up the totals, it is evident that, without counting the *personnel* of the voluntary assistance, the mobilization of the 12½ army corps of the Northern Confederation required not less than 3,851 surgeons, in the following category:—

1,156	surgeons on the active list;
1,363	“ of Beurlaubtenstand;
241	“ not liable for service;
842	“ who have not yet obtained a diploma;
77	“ foreigners;
172	appointments vacant.

In this enormous list of 3,851 military and auxiliary surgeons are not included the 1,769 surgeons engaged under contract to do duty in the military hospitals at home.

As to the non-medical *personnel*, always excepting the agents of societies in aid of the sick and wounded, the following are the figures:—

1,376	employés;
577	apothecaries;
5,286	hospital orderlies;
10,576	“ assistants (dressers);
13,017	train soldiers, including carriers of wounded (kran-kenträger or brancardiers);
30	surgical instrument makers;
170	surgery boys;
743	cooks.

Total 31,775 persons.

<sup>1</sup> The Ersatz Reserve.

*3. The Mobilization.*

It remains now to ascertain in what manner the military authorities, with the means at their command succeed in placing on a war-footing at the proper time, all the combinations in which each of the constituent elements of these large numbers takes its place. Dr. Prager, in his book on the Prussian army, Medical Department, thus writes :—

“ On account of the great want of surgeons and the absolute necessity of providing at once for the needs of the part of the army to be immediately mobilized, there is no other resource at the first moment than to take some or all of the military surgeons from the troops still non-mobilized (immobile), especially from garrison troops, depôt-battalions, and corps of Landwehr. To provide for the medical duties with these troops, arrangements are made in the different garrisons with the civil surgeons who from age are no longer liable for military service. These surgeons receive a remuneration in proportion to the services required of them.

“ The contract is made with those interested, and the remuneration fixed by the Intendance Department of the province (Provincial Intendantur), in accordance with the conditions of the surgeon-in-chief of the territorial army.

“ The allotment of the persons to their different employments at the time of mobilization was formerly the duty of the Medical-Director-General; but experience soon proved that such a duty was beyond his power to carry out. It was then laid down that in each army corps the surgeon-general should allot all the available persons. The surgeon-general, as soon as the mobilization is ordered, draws up his plan of distribution of duties with the least possible delay, and submits it to the medical department of the Minister of War.

“ There the distribution is examined and approved, or, if need be, modified.

“ In the plan of distribution, any numbers which may be in excess, may be transferred, so as to allow the Director-General to meet any deficiencies which may exist in other army corps.

“ As the Guards have no surgeons of Beurlaubtenstand, this army corps must, in the same manner, draw upon the resources of other corps.

“ To place the surgeon-general in a position to complete the distribution returns without delay, commandants of brigades are ordered to furnish each year to the general commanding the army corps, a nominal roll of civil surgeons belonging to the Reserve, the Landwehr, and the Ersatz Reserve<sup>1</sup> troops of the first and second class.

“ These lists, furnished to the surgeon-general, enable him to regulate and complete his own lists.

“ Moreover at the time of mobilization, the civil authorities send to the surgeons-general ‘states’ of all the medical men residing within their districts.

<sup>1</sup> The Ersatz Reserve includes the one-year volunteers and the men who, though in the annual contingent, are not required to serve with the colours.

" As regards apothecaries, hospital assistants, and orderlies of the Beurlaubtenstand, the surgeons-general receive annually from the Landwehr battalions nominal lists by which they can at all times control the movements of men of these classes in the different districts of the Landwehr battalions. By the aid of these documents, the surgeons-general establish each year numerical 'states' of all the surgeons, hospital orderlies, &c., of the line or the Beurlaubten-stand, and forward these 'states' in the month of March to the medical-director-general.

" With the object of simplifying mobilization, it has been ordered to carry out in advance annually in the various army corps the scheme of distribution of the surgeons of the active service, of the Reserve, the Landwehr, and Ersatz Reserve. To facilitate this arrangement, it is requisite every year that the compensation transfers, which are decided upon by the surgeon-in-chief of the army, should be carried out on paper by names, or at all events by numbers, and should be made known to the Generals commanding the respective army corps. " Furnished with this information, the surgeon-general can easily complete a nominal distribution return of the officers of the medical department."

As to the Guards, the surgeon-in-chief establishes, by means of a numerical strength in excess of other corps, a nominal distribution scheme, and brings it to the notice not only of the surgeon-general of the Guards, but also, as far as it may concern them, of surgeons-general of army corps which are to supply surgeons needed to the Guards.

Finally, to save loss of time, from the moment of mobilization, or during the course of a campaign, the surgeon-in-chief is authorised, during the time the army remains mobilized, to dispose of all military surgeons without distinction of army corps up to the rank of principal surgeon, inclusive, without restriction, and according to the exigencies of the service, with the single condition of reporting such transfers to the War Department.

In the carrying out of the distribution, every latitude is left to surgeons-general, who are required to know the capabilities of all military surgeons, and to make themselves acquainted with those of the surgeons of the Beurlaubtenstand. The following regulations must, however, be followed:—

The most able physicians and the most clever operators are to be reserved for the field hospitals.

For duty with sanitary detachments, preference should be given to those surgeons who, in addition to professional ability, possess great vigour and activity of mind and body. The hospitals are to receive as junior surgeons, and as surgeons in charge of patients, a certain proportion of surgeons of Beurlaubtenstand. The sub-assistants and the one-year volunteers will, as a general rule, not be attached to these hospitals.

After the field hospitals and the sanitary detachments have been provided for, the remainder of the medical officers are to be distributed, according to their seniority and ability, among the different appointments of surgeon-major and assistant-surgeons of corps. Almost all

the principal surgeons of regiments are placed at the head of field hospitals.

The surgeons-general of army corps are always provided with printed forms of summons and of letters of service.

Such are the principal arrangements which regulate the mobilization of the medical corps.

The entire resources of the active army and of the Beurlaubtenstand are quite inadequate to meet the requirements of the army in the field, as we have seen above. For that army, recourse must in addition be had to the pupils of the medical corps and to two non-military elements—qualified surgeons not liable for military service, and medical students advanced in their studies. As regards these latter, the conditions of their employment laid down in 1870 are as follows:—

1. All medical students who have reached, at least, the seventh half-year of study, and are liable for military service, will during the present period of mobilization be excused from serving in the ranks, on condition of completing their military service by serving in the medical corps from the time of receiving their first summons from the medical-director-general.

2. These surgeons will be made known to the medical-director-general by the recruiting authorities. The military documents and students' certificates which concern them will be attached to this notification.

3. When the surgeons have been already summoned to serve in the ranks, the documents referred to above will be forwarded by their corps.

#### *4. Control of Surgeons of the Beurlaubtenstand.*

In time of peace the surgeons of the Beurlaubtenstand include:—

1. Surgeons who have fulfilled their military obligations in the medical corps and have been discharged as surgeons of Beurlaubtenstand.

2. Surgeons who have fulfilled their military obligations by serving in the ranks, and have been subsequently admitted on their own request to enter the Beurlaubtenstand of the medical corps.

3. Those who, belonging to the Ersatz Reserve have not served in time of peace, but have been called upon for active service, and after three months' medical service have passed into the Reserve or the Land-wehr of the medical corps.

4. Those who, having completed the time of service, have been returned to be disposed of by the recruiting authorities, and have after six months' service succeeded in passing into the medical corps.

5. Those who, after serving six months in the ranks, and on condition of having to complete the rest of their active service, have been classed in the reserve of the medical corps, and invested, in case of mobilization and subject to the condition of having completed the sixth half-year of their studies, with the rank of sub-assistant-surgeon.

6. Those who in former wars have served as sub-assistants, and having obtained their diplomas, have been admitted into the Beurlaubtenstand of the medical corps.

The complete detailed and constant control of these different classes,

and precise information as to the surgeons of the Beurlaubtenstand, also as to those not liable for service in the Ersatz Reserve, are under the surgeons-general. This knowledge alone makes it possible for them to make an exact estimate of the *personnel* placed at their disposal in case of mobilization, to utilise this strength according to the seniority and ability of each, and to establish the plan of a regulated distribution each year, as well as the plan of distribution, which at the decisive moment they must forward, without further orders, to the medical-director-general. But in order that the surgeons-general be kept constantly informed, it is necessary that the Officers commanding districts of Landwehr pay constant attention to the *personnel* or list of surgeons, that they keep the surgeons-general constantly and immediately informed of all changes that occur—of surgeons newly established, change of residence, death, transfer into the active service, emigration, liberation from the service, &c.

On the other hand, Surgeons-general, Commandants of Corps and of Landwehr-districts, must each time that a surgeon quits the army corps, the various corps, or the district, report to the district commandant of Landwehr where the surgeon is about to establish himself.

It is not the less necessary that the rolls should be kept with the greatest care, as well in the offices of the surgeons-general as in those of the Landwehr authorities, and that surgeons-general should receive all reports addressed to the authorities of the command in everything which concerns the Officers and troops of the Beurlaubtenstand, also the nominal rolls of surgeons on the rolls of the commands of the Landwehr-districts, who do not form part of the medical corps rolls, which are opened each year and closed in the month of December. It is also necessary that the surgeon-general examine carefully the nominal rolls of surgeons of the Reserve, of the Landwehr, and of the Ersatz Reserve. These lists are forwarded every year to the commanding Officers of the army corps by the Officers commanding infantry brigades. There the different rolls are carefully compared with those in their own office, and in the event of discrepancies, inquiries are made or the necessary measures taken.

The control of the apothecaries of the Beurlaubtenstand is held by the commandants of Landwehr-districts, before whom the apothecaries must present themselves every time that the regulations in force require it, with the same punctuality as the surgeons.

On the other hand, the surgeons-general receive (1) every month from the Landwehr commands, a return showing the casualties which have occurred in their *personnel*; (2) every year from brigade commands a nominal list of the apothecaries borne upon the rolls of the Reserve and of the Landwehr.

Lastly, the surgeons-general cause a list to be prepared by the apothecary-in-chief of their numbers, and forward annually to the medical-director-general a numerical return and a nominal roll.

As regards the hospital orderlies, they receive from their regiments at the time they leave the active service, the "military pass" and a certificate of good conduct, and are, like other soldiers, sent back by their corps to the authorities of the Landwehr. They are entered in

the rolls of the Landwehr authorities on the one hand, and of the surgeons-general on the other. The two rolls are made out by reciprocal communication of monthly reports of casualties, and of annual nominal rolls. The hospital orderlies appear in the distribution laid down each year by the director-general and at the time of mobilization.

In the latter case the hospital orderlies are sent by the district command to the train battalion, and there, according to the distribution return, are allotted to sanitary detachments, field hospital's, &c.

Such is the outline of the means of mobilization of the medical department in Prussia. The surgeon-general of an army corps is the prime mover of the machine. It is necessary, however, to remember that the mobilization of surgeons, apothecaries, and hospital orderlies is only a part, and that the most easy, of the difficult task of all the medical field arrangements of army corps.

The most difficult part is the mobilization of the sick-bearers, the train-men and teamsters, the means of transport, and of all the materials required for a battalion or for a train dépôt.

We must add that the "Intendance," or control department has also to take part in this arrangement, placing at the disposal of the medical department in the field the men required for these purposes.<sup>1</sup>

From No. 299, "Revue Militaire," we have also abstracted the following interesting *résumé* of the organization of the medical service in the principal Continental Armies.

I. The medical service in all the Armies of Europe is self-governed, that is to say, it forms a service distinct from all others, and directly subordinate to the chief military authority.

In the German Army, this autonomy of the medical service has so long been regarded as a matter of course, that it is impossible in the luminous collection of warrants, War Office orders, and regulations which govern the medical department, to find a single sentence clearly affirming this fact.

The "Intendance," which, from a French point of view, can alone be intermediate between the military authorities and the medical service, has no other connection with that service than with other corps and services non-administrative.

In the Italian Army, where the intendance, such as we understand it, has no existence, and where the commissariat corps, which in part corresponds to it, is a corps acting side by side with the medical corps but not above it, the medical service regains its own independence (right of self-government) under the command of the military authorities. It is the same in Switzerland. If, on active service, a part of the Italian medical service, the field hospitals, are placed under the orders of what is termed in Italy the "Intendance of the Army," it is because this intendance, far from being analogous to that which is so called in the French Army, is merely a part of the military command.

<sup>1</sup> See "Militair Wochenblatt," 13th April, 1872, and "Revue Militaire d'Etranger," 16th April, 1872, and 11th and 18th March, 1876.

From many points of view, and especially in all its relations with the medical service, the intendance of the Italian Army is no other than the Prussian department of inspectors-general of military communications ("inspection générale des étapes"). It would then be a strange misconception of terms, to conclude from this arrangement, that the medical department in Italy was subordinate to the intendance.

In Austria, as in Italy, the medical department is not subordinate to the "intendance." If on service, the second line of the medical establishments and their medical director are placed under the orders of the "Intendant of the Army." It is to be observed that the latter is, as in Italy, a general officer, and that his authority is not simply administrative, since, in addition to his administrative staff, he has a military staff. This subordination to military authority represented by a general Officer invested with the full powers of an intendant of the Army, is direct.<sup>1</sup>

Those of our readers who remember our remarks on the medical services of the Russian and Spanish Armies, know that this department is in those countries absolutely independent of every administrative service and is placed under direct military command.

II. In all European Armies the control of the medical department is in the hands of the military surgeons.

Let us proceed to examine, in detail, how this control is exercised.

1. In the peace and war establishments.
2. In army corps.
3. At the central administration.

#### 1. *Establishments.*

The Prussian Army. The control of the peace-hospitals is left absolutely and without restriction in the hands of the surgeons-in-chief: the peace hospitals are declared officially by the Cabinet Order of 24th October, 1872, to be placed under the control of the chief surgeons. The surgeon-in-chief holds the command of the hospital, he is chief of all the *personnel*, military, medical, and administrative, employed for the service of the hospital. The administration (which is conducted by a Committee, of paymaster and steward) is subordinate to his direction and control. As to the intendance, which once took part in the administrative control, its duties are limited to the verification of accounts and the ordering of credits. It still intervenes to direct, in concert with the surgeon-in-chief, the distribution of the different branches of the administrative services among the various persons employed at each establishment.

The arrangements applicable to peace-hospitals are equally so to field-hospitals.

This principle is not neglected except as regards sanitary detachments (ambulances of the first line), where an Officer being placed at the head of the company of carriers of the wounded attached to the

<sup>1</sup> The head of the Medical Department near the Intendance of the army is responsible to the Intendant in all matters concerning the medical service under his immediate orders.

ambulance, it is naturally to this Officer, and not to the chief surgeon, that military commanders refer, under the general direction of the surgeon of the division or army corps.

Italian Army. "The control of each hospital belongs to the "surgeon of the highest rank among those attached to the hospital. "The board of administration of each hospital will be composed of: "the surgeon director, president; the two next senior surgeons, members; an officer of the pay department reporter; and secretary." (Decree of 23 November, 1872, Article IV.)

Austrian Army. In addition to the control of the medical service, properly so-called, the senior medical officer takes at the same time the title and duties of director (Leiter) of administration and management. He is president of a board of management, composed also of the commanding officer of the "troupe de Santé," and of an accountant.

Russian Army. The greater portion of the hospital establishments of the Russian Army are the regimental hospitals placed under the authority of the chiefs of their respective corps. General hospitals and militia hospitals are placed, in all that concerns their military aspect, under the orders of the Commandant of Militia (des troupes sédentaires), for medical and administrative purposes under the direction of the chief surgeon, president of the board of administration.

Spanish Army. The control exercised by the surgeon-in-chief is absolute, as in Prussia.

## 2. General Commands, Army Corps, Divisions.

All the Military Powers have established near the chief of the great strategic unit—army corps, general command, or division—a director of the medical department, whose duty it is to centralize within the limits of this unit, everything which concerns the medical corps and service.

The duties of surgeon-general of a Prussian army corps include—the *personnel* of surgeons, apothecaries, hospital orderlies and dressers, all medical, surgical, and pharmaceutical stores, hygiene, sanitary police, medical statistics, the recruiting and mobilization of the medical corps. A recent article in the "Revue," has given elsewhere, circumstantial details of the duties of a medical director of an army corps. We may add that an Order in Council of the 6th February, 1873, lays down, for the Prussian Army, the creation of the appointment of surgeons of division, intended to form a new grade between the local authorities represented by the chief surgeons of hospitals and the authorities of the province represented by the surgeon-general of army corps.

In Italy, the decree of the 17th November, 1872, defines the duties of principal surgeons of divisions—the organization of the Italian Army in time of peace corresponds, as is well known, with territorial divisions and not with army corps districts. This decree lays down orders that:

"The appointment of director of military hospitals, instituted by the decree of the 13th November, 1870, in each territorial division,

" shall be given to a medical director, nominated for that employment  
" by decree.

" The medical director of the military hospitals of a division,  
" already responsible for the professional control of the medical ser-  
" vice in the hospitals, shall have, in addition to these duties, the  
" control of administration and of discipline. He will be, in point of  
" fact, entrusted with the authority of chief of a corps, in all that  
" concerns the *personnel* as well as the supplies and the management.

" Each divisional direction of hospitals will be administered, carried  
" into effect, by a permanent Committee, of which the medical director  
" will be president; the two next senior military surgeons, members;  
" the pay officer, director of the accounts; reporter; and secretary."

The hospitals and ambulances are subordinate to the divisional  
command (territorial or mobilized) as a detachment depends on the  
unit which furnishes it.

In the Austro-Hungarian Empire, in Russia, and in Spain, the  
surgeons-in-chief of military commands, of territorial circles, of con-  
scription, &c., fulfil under the sole authority of the general command-  
ing, functions analogous in all points to those of surgeons-general of  
Prussian army corps.

### 3. Central Administration.

Prussian Army. The dualism, which, before the reforms of 1868  
completed in 1872 and 1873, was the characteristic of the German  
medical service, and which placed, on the one hand, the professional  
portion (*personnel* and *matériel*, medical, surgical, pharmaceutical, and  
auxiliary) at the office of the medical director-general, and on the  
other hand, the purely administrative portion, at the department of  
military administration, this dualism was suppressed by the creation,  
at the War Office, of a military medical division (Army medical  
department) at the head of which was placed the surgeon-in-chief of  
the Army.

By the terms of the Order in Council of 28th September, 1868, the  
duties of the Army medical department include :

1. Hygiene, sanitary police, and medical statistics.
2. Final decision of medical questions of recruiting and of discharge  
from the service.
3. The supply of the Army with medical stores, surgical instru-  
ments, and materials.
4. The management of hospitals in peace and war.
5. The *personnel* and the schools for military surgeons, apothecaries,  
hospital orderlies, and assistants.

In Bavaria, the organization of the military medical department at  
the War Office is the same.

The Spanish Army has an almost exact copy of the same organization.

In the Austro-Hungarian Army, the dualism, which we remarked  
above was once the characteristic of the German service, still exists,  
only the two leading divisions, on which depend all the branches of  
the medical service, are both under the control of a military surgeon,

One of these divisions is the medical board, of which the president is the director-general of the medical department, and which is entrusted with the hygiene and sanitary police of the Army, also with the medical machinery of recruiting and of invaliding. The second of these divisions, which constitutes the 14th division or department of the War Ministry, the military medical division, is responsible for the hospital service.

In the Russian Army, the medical service is conducted by a special central administration, it bears the number nine, and comes immediately after the administration of engineers. Presided over by a medical inspector-general of the Army, it comprises, independently of a scientific committee and office of administration, the four following sections:

1. Hygiene, sanitary police, and legal medicine.
2. The *personnel* of surgeons, veterinary surgeons, apothecaries, and hospital dressers.
3. Stores, medical, surgical, and pharmaceutical.
4. Accounts and records of expenditure of stores.

All that concerns the *personnel*, the establishments, furniture, and working stock, is controlled by the hospital committee, consisting, under the presidency of the chief of the general staff, of three members, who are: the chief of the central direction of the medical service, the deputy chief of the central direction of engineers, and the intendant-general.

The Italian Medical Board is formed on the model of that of the Austrian Army. Independently of its professional duties (hygiene, military, and legal medicine), it is invested with the control of the officers and men of the medical corps, and centralizes the divisional medical service.

In conclusion, in all the great Continental Armies, all the component parts which form the medical service of the Army are arranged in one corps, distinct non-administrative service, independent of other corps, arms, or services of the army, and placed immediately under military authority.

In all armies and in the different details steps which form the general organization of armies, from the hospital up to the medical division or section of the central administration, the control of the medical service is in the hands of the military surgeons.

## THE MILITARY RESOURCES OF HOLLAND.

By C. E. HOWARD VINCENT, F.R.G.S., Lieut.-Colonel Central London Rifle Rangers; of the Inner Temple, Barrister-at-Law, late 23rd Fusiliers.

THE Dutch are a quiet, industrious people, occupying themselves but little with the disagreements of their neighbours, and seldom asserting themselves upon international questions. But they occupy wherewithal a territory, which, at the same time that it is for our interest they should continue to hold, possesses such a seaboard and such maritime resources, as cannot fail to excite the envy of any power desirous of developing its naval strength. Small kingdoms lying at the gates of mighty sovereigns, need be watchful lest their lack of foresight should jeopardise their very existence. From time immemorial, the inhabitants of the Netherlands have, upon necessity, proved themselves patriotic and courageous. These, however, are days when mere patriotism and courage avail but little unallied with preparation and organization. The former moral qualities the Dutch still incontestably possess. How they stand as regards the latter necessities for defence, I here propose to show.

The forces of Holland are composed of:—

- (a.) The standing Army.
- (b.) The militia.
- (c.) The schutters (protectors).
- (d.) The landsturm.

The standing Army is recruited by the voluntary enlistment of men from the early age of 16 to the mature state of 40. The first engagement is for six years, after which men can bind themselves afresh for one, two, or six years. It is strange to find a foreign country furnishing its Army in a manner so similar to ourselves. Nor is it possible to deny that the Dutch are no less dissatisfied than ourselves with this voluntary system. For them the question at stake is of a more serious character. We have three score miles or so of treacherous ocean betwixt ourselves and an invader; they, naught but an artificially-marked frontier line. True, the dykes, which in peace keep at bay the intruding waters, may be cut through and the impatient flood suffered to come in, but the result, though inconvenient to the enemy, overwhelms the country with ruin, destroys towns and villages, overthrows castles and cabins, nullifies the industry, the labour of years, and presents a terrible picture of human suffering.

The attractions of a civil career, the emoluments attainable by skilled labour in less irksome paths, render the recruiting slow and difficult. Re-engagements are rare, even amid the non-commissioned officers, who can thereby obtain a bounty of 600 gulden. Nevertheless, it is stated, and no doubt correctly, that the Army numbers in peace some 30,000 men, and in war 61,000. This large increase is obtained by the accession to the standing Army of the militia, which forms its reserve.

The militia is likewise recruited, as far as possible, voluntarily, but its numerical deficiencies are repaired by conscription. The period of service extends over five years, whereof the first year is continuous, and the remaining four are subject to an annual inspection and one training of five or six weeks. As of late the standing Army has been considerably below its strength, it is in contemplation to extend the first training from one to two years. At present some 11,000 militiamen are assembled each year, but it is proposed to increase this number to 13,000, and to allot 1,000 thereof to the naval militia.

The Dutch infantry consists of 9 regiments, each of 4 battalions with 2 dépôt companies, armed with the Beaumont breechloader.

Each company numbers 3 Officers and 188 men.

The cavalry consists of 4 regiments of 6 squadrons, whereof one is in reserve and another forms the dépôt. The field squadron is composed of 5 Officers, 202 men, and 126 horses.

The artillery consists of 1 regiment of 14 field batteries, and 1 regiment of 4 horse batteries.

In addition to these forces, there is an Engineer corps, with 70 Officers and 40 artificers; and 5 companies of sappers and miners.

The whole of the above form the field Army, which is divided into four Divisions. Their military value is not perhaps particularly strong, but they possess one cardinal quality in the allotment of all the commands, and in the exact composition of the several divisions.

We may now turn to the Schutters or protectors of Holland. They are intended for the defence of the soil and the preservation of internal order. Every Dutchman not serving in either the standing Army, the Navy, or the militia, is supposed to belong to the schutters from the twenty-fifth to the thirty-fifth year of his age. But as the schutters can only be two per cent. of the entire population, the candidates are selected by lot. The ten years' liability is divided into two equal periods, of which for the latter the schutter belongs to the reserve. The active schuttery, consisting of the twenty-five to thirty-year old men, is divided into 220 companies, of from 110 to 150 men. Twenty-five of these companies are instructed in big gun practice. The reserve schuttery numbers 89 battalions, with a total strength of some 40,000 men, armed with the Snider.

The last unit of the Dutch defensive force—the Landsturm—includes all males from nineteen to fifty years old, but, as is usual, its organization is deferred to the moment of necessity.

As to the Officers, after a two years' course—about to be extended to three at the Military Academy—those Officers destined for the cavalry and infantry are appointed to regiments. Those wishing to

enter the engineers or artillery, having successfully passed the ordinary examination, remain for an additional twelvemonth at the school. Last year also a Staff College was established at Breda; but, as the entire staff corps numbers but 20 Officers, it is not expected that very many will avail themselves of the College on such a very meagre chance of employment.

Such are the military resources of Holland. We confess that they are not on so satisfactory a basis as might be desired. Although the most is made of an inferior system, it may well be doubted whether, even in such a limited area, the Army could be mobilised within the forty-eight hours that sanguine Dutchmen anticipate. Sufficient allowance is not, we venture to think, made for the variety of elements which compose the military forces. Insufficient account is taken of the deficiency of Officers and good non-commissioned officers in the militia and in the schuttery, not to say in the regular Army. It is idle to conceal it, the Dutch are not a soldier people and the Army is not popular. It partakes singularly little of a national character. In those branches recruited in part by conscription, substitutes are obtainable for a very small sum, and they consist almost wholly of inferior individuals, taken from the poorest classes. Universal service is an absolute necessity for Holland, and the sooner it is adopted, the more secure will the country be.

Not a few will recognise, even in this glimpse of the forces of the House of Orange, a system, as regards many particulars, which some of our insular reformers would feign import. Such is especially the case with respect to the Dutch East Indian Army. It is entirely distinct from the Home Army, and is formed of Europeans, mercenaries, and natives. The total force numbers 1,476 Officers, of whom 67 are non-Dutch Europeans, and 29,194 men, with 1,379 horses. The infantry are armed with the Beaumont rifle, and the artillery provided with breechloading rifled guns.

I will not go so far as to say that this system is radically bad; but the heterogeneous nationalities and the inferior Officers of the Dutch Indian Army must detract considerably from its value.

## THE NEW FRENCH INFANTRY TACTICS.

By a decree dated 12th June, 1875, a new system of Infantry drill was substituted in the French army for the regulations then in force, and which date from the 16th March, 1869.

To a Commission of Officers presided over by General Blot, of the Staff of the Minister of War, was entrusted the duty of bringing the Regulations of 1869 into conformity with the requirements of warfare evidenced by the campaign of 1870-71. The Commission disclaim any revolutionary inclination in dealing with the question, but whilst acting as far as possible in a conservative spirit, they seem to have accepted in their entirety the conditions of the combat in which the rifled gun and the breech-loading small arm are the weapons employed.

The report of the Commission is placed in the drill-book as an introduction to its contents, an excellent and praiseworthy measure, as such prominence is thereby given to the spirit which animates the new system, that it will be difficult for any French soldier to follow out henceforth that system only in the letter. It is purposed to give in this article an outline of the new system and of the grounds on which it is based.

As a matter of course increased importance is assigned to the company, but the reasoning by which this alteration is supported and justified, is so peculiar that it must be given *in extenso*.

"It is evident that in the combat in extended order, the battalion  
"in first line, which as has just been admitted must be broken up, can  
"no longer be commanded directly and by word of mouth of its com-  
"mander, as should be the case with all bodies of troops in immediate  
"contact with the enemy.

"In the company, this mode of command will still be possible for  
"the captain; we are therefore led to regard the company as the real  
"fighting unit (*unité de combat*).

"But the company is too weak to carry on an action by itself; its  
"strength is not sufficient to allow it to act independently; the bat-  
"talion, on the other hand, unites all the conditions indispensable to  
"carry through an enterprise to a successful conclusion; moreover, it  
"is to the battalion, not to the company, that under any circumstances  
"orders will be given from superior authority. It is then the duty of  
"the commanding officer of the battalion to exercise a general control  
"over his four fighting units, and to cause them to work together to a  
"common end. The battalion is always the centre of action; it is a

" body, of which the companies, the fighting units, are the arms. It follows that it remains the tactical unit."

It is to be hoped that in their efforts to learn from their late antagonists in organization and tactics, the French have not grasped at the shadow instead of the substance. If the French want to find the unit commanded on the field of battle by word of mouth, they must search far below the company; but, assuredly, no reason of this kind influenced the Germans when they assigned a certain amount of independence and a great share of responsibility to the leader of 250 men.

The Commission is more successful in dealing with the means by which order is to be maintained under the antagonistic influences of undivided action and of formations in which "touch" is no longer preserved:—"The inconveniences arising from the new system of "tactics will be avoided if the fighting in extended order be carefully "regulated, and if troops are practised during peace under circumstances resembling as closely as possible those met with in war, so "that by the use of a simple formation always and everywhere "practicable, this order soon becomes familiar to them;" and recognizing the vital importance of decentralization in drill as well as in administration, the report continues:—"For the same object the "cohesion in each fraction must be maintained by every available "means; commanders of all ranks must, in assuming the initiative, "learn to judge accurately the amount of responsibility which rests on "them; and finally the intellectual and moral power of each officer "and soldier will be increased by a more complete and thorough "training."

The second part of the introduction deals with the "Proposed "Normal Formation for a Battalion in first line." The battalion works in four lines, the front three being made up of two companies working side by side under their own captains. The three lines are respectively "shooters," one-fourth of each company, "reinforcements," one-fourth of each company, "supports," one-half of each company, the "shooters," and the reinforcements are under the command of one officer of the company; the third line, the "supports," aiding the lines in front, and connecting them with the fourth line which is the reserve of the battalion, are commanded by another officer of the company; the captain is free to select his own position; the "supports" must be kept intact as long as possible, and as soon as men are sent from it to the lines in front, the task of support devolves at once on one of the companies in rear, which either united or separate from the battalion reserve. Each line has a certain amount of latitude of action. The directive authority of the commander of the battalion is maintained.

It is considered that at the moment of contact with the adversary, the number of men in the front three lines should be one man per metre; their strength is therefore regulated so that after a reasonable deduction, arising from losses and other causes, this result will be attained. It is assumed that a company on war footing commencing a campaign with 250 men, will, from causes operating outside the battle-field, soon be reduced to a strength of 200, then deducting

further 16 men for staff (not rank and file), and 30 men (about  $\frac{1}{7}$ ) for losses, there will remain out of the three lines in which each of the advanced companies was originally formed, 154 men. The two companies side by side will therefore at the decisive moment cover, in round numbers, 300 metres, or 327 yards. This front of 300 metres for the battalion, and 150 for a company, is accepted as the normal front.

With regard to the distances apart of the four lines, the Commission still regards 2,000 metres = 2,180 yards, as the limit of effective range of shrapnel (*obus à balles*), and therefore as the distance of the reserve from the enemy's guns when the shooting-line comes into action against them at 1,000 metres. This difference of 1,000 metres between the head and the rear of the battalion is a maximum. The reinforcements are placed 150 metres in rear of the shooters. The supports are 350 metres further back and consequently midway between the shooters and the reserve. These distances are of course subject to modification, but save under exceptional circumstances, the depth of a battalion is not to be less than 500 metres, as it is considered that if the lines be brought closer together it will be difficult to prevent those in rear taking part in the fight prematurely. Great stress is laid on the reserve remaining intact in the hand of the Battalion-Commander to the last moment.

In laying down the principle on which the attack is to be conducted, the Commission supposes that the artillery of the enemy is 600 metres in rear of his shooting line.

At 2,000 metres from the position, the battalion, already in line of company columns, breaks into the attack formation.

Before, however, following in detail the movements of these companies, a sketch of their interior organization is necessary. A company of French infantry is divided into four sections, numbered from right to left. The first two, form No. 1 peloton, the last two No. 2 peloton. On the peace footing, each section is divided into two squads (*escouades*), these are numbered respectively 1, 3, 5, 7, 9, 11, 13, 15, through the company. On service, the number of squads is increased by the addition of squads which take the even numbers. In those companies, however, which have twelve corporals the four sections are each divided into three squads, and on mobilisation, four others, numbered 4, 8, 12, and 16, are formed. Each of these squads is placed in charge of a corporal, and each squad will consist of 12 or 13 men. The company is, therefore, so organized that it may be broken up, even into sixteen pieces, and yet the men of each piece will find themselves under control. The Commission very truly observed in an earlier part of the report that much of the confusion of modern fighting was due to the absence of an organization reaching down sufficiently low. The theory somewhat inconsistently put forward by the Commission that a company can be efficiently commanded personally by one Officer is contradicted by the plain logic of facts, and the Commission practically refutes the idea by providing commanders for the sixteen fragments into which the company can, on an emergency, be divided. It is only in fact by the complete development of the squad system, which with weak companies

necessarily falls into abeyance, that the fighting of the future will be other than that of a mob.

The battalion in advancing to the attack is preceded, 80 metres in advance, by *éclaireurs*, whose duty it is to search and learn the ground for the benefit of the troops which follow. Even if cavalry be lending its aid, the *éclaireurs* are thrown out to the front.

Each of the leading companies sends forward a section to form its shooting-line, the section opening out gradually into line of squads at deploying distance; each squad remains grouped in close-order until ordered to deploy, and it is preceded by two *éclaireurs*. The deployment of the squads takes place at 800 metres from the enemy, the *éclaireurs* at the same time opening fire slowly. On arriving 200 metres nearer the enemy, the fire is opened along the whole shooting line, being reinforced, if necessary, from the second line. The shooting line advances in the orthodox manner in fractions by bounds, a process continued until 300 metres have been traversed, and they are at that distance from the adversary. Reinforcements are called up as required. After a few moments of rapid fire at this range, any portion of the "support" not already called up, and a company of the reserve which has replaced the "supports," advance in close formation to give a final impulse to the fighting-line at the decisive moment. The fourth company hovers about in rear, gradually moving forward, but carefully abstaining from taking a more active part in the operations. It is thus ready to avert a counter attack or to execute an attack in flank.

How to carry the assailant successfully over the ground lying directly under the rifles of the defenders, is a problem which has been determined to the satisfaction of theorists only. The Commission having to direct practice, not to enunciate theories, honestly admits that for this period of the fight it is impossible to lay down any rules. They object to a general advance firing, as throwing away ammunition and destroying that dash which is, under the circumstances, of special value.

"At this moment there can no longer be any rules, no mode of procedure can be laid down: one portion of the line favoured by the position of some obstacle, rushes rapidly towards it and assists the advance of the remainder by a well-aimed and well-sustained fire; units are no longer acting, but fractions of no particular size whose strength and number depend on circumstances only."

The only resource, the Commission says, is to resume the advance in *échelon* by bounds, the short halts being utilized for the delivery of rapid fire. On arriving within 50 metres of the enemy, shock tactics, if such are ever now called into play, or the dread of them, must effect the rest.

The fourth company now acts vigorously in support, always remaining under the hand of a commander, and either occupies the position, or else covers the retreat. As soon as this company enters into the engagement, the troops in rear are informed of the fact, and some of them are sent to replace it.

Having enunciated the principles which should govern the offensive, the Commission proceeds to deal with the defensive; and it may fairly

be presumed that the lessons derived from the bitter teachings of experience of the last war will have been turned to profit.

"In principle the hypothesis of a passive defence is absolutely rejected. The active defence, the only one dealt with here, should only seek in the choice of ground and in the attitude of expectation an increase to its own power, and the means of bringing the fight on to ground it knows, where it has arranged its troops beforehand, so as to strike the enemy with certainty and under the most favourable conditions."

The formation adopted for the defence is similar to that used in the attack; the distances between the lines are however less, and are not diminished during the action, each line remaining in its original position until required to take a part in the fight. The occupation of the front line may be continuous or at intervals, or in tiers; the minimum strength of rifles in the shooting-line is one per metre. The reinforcements and supports kept under shelter are called up as wanted. It is only when the efforts of the three advanced lines no longer suffice to hold back the assailant, that the two companies forming the reserve are called on to act. A portion of them is left in rear as a rallying point and support, while the remainder endeavour to create a diversion by a counter-attack in flank. The French are severely reproached by military writers for their neglect of an active defence during the last war; these writers are for ever urging the importance of counter-strokes.

Theorists, however, are very careful not to prescribe the details of this most difficult and hazardous operation. In fact, Boguslawski himself says: "The counter-attack, leaving your own position, has, however, now become a ticklish matter, and should, at most, be made only to a short distance. This is a serious undertaking, because it leads you at once into the enemy's fire without cover, and thus brings you into the most awkward position of modern warfare. You should think twice before you leave your shelter (from whence you are pouring a destructive fire) for this purpose."—"Tactical Dedications," page 174.

Notwithstanding, then, the advice so freely and gratuitously showered on the French in this matter, it will hardly surprise those who have studied the subject to find it dealt with in the "New Field Exercise," in the following brief sentences:—

"If the defence is not successful in keeping the enemy out of the position, the part of the reserve which has been retained in rear receives the front lines, rallies them, and endeavours to lead them back to the fight. At this moment the artillery fire of the assault has ceased, the assaulting troops are disorganized and out of breath, a counter-attack, executed energetically, with fresh troops, even though numerically weak, possesses chances of success. The commander of a battalion ought always to spare his troops in view of the eventuality; if he has to abandon the position, he will, aided by the second line, try, by a vigorous counter-attack, to drive the enemy out before he has time to make sure his footing."

"As to the counter-strokes to be made during the preparatory portion

" of the attack, they must depend on particular circumstances, on the  
" form of the ground, and on the faults committed by the adversary.  
" No favourable opportunity will be allowed to escape. The fractions  
" of troops thus employed will generally be taken from the companies  
" in reserve; their action will be always seconded by an increase of  
" fire on the part of its defence."

Such, then, are the principles on which French troops will fight in future, whether on the offensive or the defensive.

In the third and last portion of the Report, the Commission deals with the important question of the method of instruction to be carried out in peace-time, laying down, incidentally, the common-sense maxim — first settle the tactics, then regulate the drill. The recommendations of the Commission seem thoroughly sound; whether they are altogether applicable to the French character, time alone can show.

There can be little doubt, however, that no system of instruction whatever can produce satisfactory results, unless, following the advice of the Commissioners, it is based on the development of the power of the individual, the combination of individual efforts to one common end, the maintenance of strict discipline, the zealous devotion of all available time to drill which is really useful, the engaging the interest of the young soldier in the instruction, the assimilation of peace-drill to the actual occurrences of actual war, simplification and uniformity in words of command.

## NOTES ON FIELD GUNS.

BY LIEUT. W. H. JAMES, F.G.S., R.E.

*The German Guns* are made of cast steel hooped round the breech with rings of the same material. The breech-closing apparatus is that known as the "Rundkeil Verschluss," *i.e.* a cylindro-prismatic wedge tightened in the gun by means of an interrupted screw acting perpendicularly to the axis of the bore. The gas-check is composed of a ring of soft steel; it acts on the Broadwell principle, butting against a steel plate in the surface of the wedge. Each gun carries three steel plates and three rings. The carriages are made of sheet-steel. The hand-spike is permanently attached to the left side of the trail. The elevating screw is similar to that formerly employed, except that the upper portion screws into the lower. The axle is of steel. There are no axle-tree boxes; but seats are provided for two gunners on the axle of the 9 c.m. gun. The wheels are Madras wheels with bronze naves. The method of packing the ammunition in the limbers differs considerably from any yet introduced. The projectiles are contained in two cupboards in the rear of the limber-box, which is of iron; each cupboard contains three hollow racks, each holding six projectiles for the 8 c.m. and five for the 9 c.m. guns. The cartridges and necessary stores are carried in the top of the limber-box which opens in the usual way. The wheels of the limber are the same as those of the gun. The ammunition-waggons are those of the construction of 1864 (except the limbers which are the same as for the guns) and have merely been altered to take the new projectiles, but new waggons of iron are under experiment.

The common shell fired by the German field-guns is that known as the double-skin shell. It consists of two projectiles embedded one within the other; the exterior surface of the inner one being shaped into a number of pyramids which when the outer portion of the projectile is cast over them, rest in corresponding cavities in the latter. The result of this arrangement is a more regular fragmentation on explosion, and a larger number of fragments than is obtained with an ordinary shell, and there is no doubt that it is, *quâd* its man-killing powers, a far more efficient projectile. The shrapnel shell contains a larger number of bullets than the English one, but the bullets are lighter. The bursting charge of the German shrapnel is contained in a central tube. It is ignited by means of a time-fuse in which the composition is arranged in a ring. This fuse differs in no important particular from that in use since 1870 for field-guns in the Prussian service; but it is understood that a new pattern is under experiment. The percussion fuse used for double-skin shells is similar to that hitherto employed, with the addition of a safety-pin, which permits the shells to be carried ready fused in the limbers.

*The French Guns* are made of bronze, that portion of the bore towards the breech which is usually the first to show signs of corrosion, being lined with steel. They are breech-loaders, the breech-closing apparatus being similar to that in use in the French Navy for heavy guns, *i.e.*, a solid interrupted screw. The surface of the thread of the screw being divided into six equal parts, the alternate ones are removed, so that one-sixth of a turn disengages the threads, and allows the breech-screw to be withdrawn. There is no gas-check, its place being supplied by the base of the cartridge which contains the powder charge. The cartridge-case has a brass base, the body being formed of sheet-iron lined inside and out with paper. On explosion, the base expands and effectually prevents the escape of any gas.

The gun-carriages are of iron and call for no particular remark. The limbers are also of iron, and an iron ammunition-waggon is undergoing trial.

The French have adopted to a slight extent the double-skin shell; but their principle projectile is the common shell. The bursting charge of their shrapnel is placed in front of the shell, and is ignited by a percussion fuse, time-fuses not being employed for any nature of projectile. These guns are only provisional and, as soon as steel guns have been manufactured in sufficient numbers for the regular army, will be turned over to the territorial army.

*The Austrian Field Guns* are of cast bronze, composed of 92 parts of copper and 8 of tin. They are cast chase downwards, are turned and bored, and the bore is then hardened and compressed by forcing coned steel mandrils through it.

The breech-loading apparatus is similar to that employed in the German guns; but the gas-check is made of copper and consists of a copper ring in the posterior end of the chamber, and a copper plate in the wedge.

The gun-carriages are of steel; the limbers are of wrought iron and are open behind in a manner analogous to the German limbers.

The common shell is similar to the double-skin shell employed in Germany, except that the interior portion is divided into a series of rings placed one on the top of the other, each ring presenting the appearance externally of a ring of pyramids. This construction is found to give even better results than the original type from which it was taken.

The shrapnel-shell resembles that employed in the English service in the position of its bursting charge, which is, however, larger. It is fired by means of a time-fuse.

The Austrian Artillery carry a small proportion of incendiary shells which are similar to the old-fashioned carcasses.

The gun above-mentioned is intended for the field batteries, that for the horse artillery is still under experiment, but will have a calibre of 2.95 ins.

The German and French projectiles take the rifling by means of a lead coating, that for the former being hardened. The Austrian shells are provided with copper rings on the Vavasour principle.

## NOTES ON FIELD GUNS.

A Comparative Table of German, French, Austria, and English Field Guns.

Weight of shrapnel, with fuze. | 12.2 lbs. | 17.9 lbs. | 12.1 lbs. | 10.3 lbs. | 45  
No. of balls in ditto. .... | 122 | 209 | 46 | 45 | 165 | 60 | 128 |

Principal dimensions, &c.	German.	French.	Austrian.	English.	Remarks.
Weight of one ball, .....	8 c.m.	9 c.m.	9 c.m.	9-pounder.	16-pdr.
Weight of one ball, .....	28 to the lb. 28 to the lb. 25 to the lb. 25 to the lb. 16 $\frac{3}{4}$ to the lb.	Canon de 5. Canon de 7.	*	25 at 18° 35 at 34° to the lb.	72 at 18° 56 at 34° to the lb.
Weight of bursting charge .....	·67 oz. 11 lbs.	·4 oz. 16·5 lbs.	·7 oz. 14·8 lbs.	3 oz. 15·8 lbs.	1·5 oz. 9·75 lbs.
Weight of case-shot .....	.....	.....	.....	.....	.....
12	.....	.....	.....	.....	.....
22 No. of balls in ditto, .....	76 zinc	76 zinc	82 hard lead	110 hard lead	176 hard lead
Weight of one ball .....	9 to the lb. 5 $\frac{1}{2}$ to the lb.	9 to the lb. 5 $\frac{1}{2}$ to the lb.	8 to the lb.	16 $\frac{1}{2}$ to the lb.	16 $\frac{1}{2}$ to the lb.
Weight per square inch of shell section, common, double-skinned, or segment shell .....	23·85 ozs.	26·21 ozs.	23·3 ozs.	27·42 ozs.	25·97 ozs.
12	.....	.....	.....	.....	.....
22	.....	.....	.....	.....	.....
<i>Gun-Carriages.</i>					
Weight of gun-carriage equipped with gun .....	1,698 lbs.	2,062 lbs.	2,926 lbs.	2,259 lbs.	2,957 lbs.
Diameter of wheel .....	65 ins.	55 ins.	58 $\frac{3}{4}$ ins.	52 $\frac{3}{4}$ ins.	60 ins.
Track .....	60 ins.	60 ins.	63 ins.	60 $\frac{1}{4}$ ins.	62 ins.
Rounds carried on gun, .....	1 case	1 case	.....	.....	4 case

## NOTES ON FIELD GUNS.

Principal dimensions, &c.	German.		French.		Austrian.		English.		Remarks,
	8 e.m.	9 e.m.	Canon de 5.	Canon de 7.	9 c.m.	9-pounder.	16-pdr.		
<i>Limbers.</i>									
Diameter of wheel.....	55 ins.	55 ins.	63 ins.	63 ins.	52 <sup>3</sup> ins.	60 ins.	60 ins.		
Weight of limber, packed.....	2,062 lbs.	2,206 lbs.	1,276 lbs.	1,634 lbs.	1,987 lbs.	1,748 lbs.	1,837 lbs.		
Weights carried in limber—									
Common shell .....	24	20	24	24	* 22 or 24	12	12		
Double-skin ditto.....	12	10	10	10	3	10	18		
Segment ditto .....	2	2	4	4	3	4	4		
Sharpened ditto .....			....	....	....	....	....		
Case.....									
Total.....	38	32	32	28 or 30	34	30	24		
Weight, complete, behind team	3,960 lbs.	4,268 lbs.	3,476 lbs.	4,620 lbs.	4,246 lbs.	3,792 lbs.	4,784 lbs.		
Number of horses.....	6	6	6	6	6	6	6		
Number of men carried on gun	...	2	...	...	2	2	2		
Ditto on limber .....	3	3	2	2	2	3	3		
Weight per horse.....	660 lbs.	711 lbs.	579	770 lbs.	708 lbs.	632 lbs.	698 lbs.		
Number of wagons .....	8	8	6	6	6	6	6		
Weight of ditto (with limber).....	4,686 lbs.	4,928 lbs.	4,928 lbs.	4,721 lbs.	4,452 lbs.	4,621 lbs.	4,621 lbs.		
Number of horses .....	6	6	6	6	6	6	6		
Weight per horse.....	781 lbs.	821 lbs.	821 lbs.	772 lbs.	708 lbs.	770 lbs.	770 lbs.		
Number of rounds in wagon—									
Common shell .....	56	50	72	66 or 72	....	36	22		
Double-skin ditto .....	...	...	12	9	55	72	50		
Segment ditto .....	28	25	12	9	30				
Sharpened ditto .....	...	2	....	....	5				
Incendiary shell.....	2				4				
Case.....									
Total carried in wagon .....	88	77	96	84 or 90	94	108	72		
Total number rounds per gun carried by the battery .....	154*	136*	128+	112 or 120+	128+	142+	100+		
								* With 8 wagons, + With 6 wagons.	

## FORTIFICATIONS ON THE RUSSIAN-GERMAN FRONTIER.

The following notice in connection with this subject is taken from the "Revue Militaire de l'Etranger," of the 25th March last.

Fortifications of Posen. The "Russki Mir," of the 2nd March, contains the following article :—

"Posen correspondence, which we give below, will convince our readers that our neighbour, Prussia, notwithstanding the *entente cordiale* between the Governments, is directing all her efforts to arm "as quickly as possible the frontiers contiguous to Russia, and is "making Posen one of the strongest fortresses in Europe.

"The rapidity and the energy with which the works are being "carried out, renders the fact doubly remarkable ; no pause is allowed "even in face of the enormous expense involved, and of the ruin which "threatens the province through the appropriation of a vast amount "of agricultural labour for the construction of the new works.

"We cannot pass by, in silence, an important fact which belongs to "a past not long gone. During the last Franco-Prussian war, when "Russia gave such aid to Germany, as the Emperor of Germany has "himself openly declared, Prussia allowed no opportunity to escape of "increasing and strengthening the fortifications of Königsberg, Thorn, "Hætzen, and Memel, by employing French prisoners at the work. "To the foregoing we will add the remarks made by one of our rail- "way constructors recently returned from Paris. He tells us that the "German railways leading from Berlin towards the Russian frontier "are on a footing out of all proportion to commercial requirements. "The quantity of auxiliary lines and sidings is very striking. These "have no meaning unless intended for the rapid and easy transport of "large bodies of troops.

"Are we taking corresponding measures ? we may ask. We hope "those who defend in Russia the civilizing influence of Germany, "will forgive our suggestions."

The Posen correspondence alluded to is as follows :—

"Prussia is day by day working to strengthen her Russian frontier. "In a little time Posen will be one of the strongest fortresses in Prussia ; "not even excepting the recently acquired Metz. A considerable number "of advanced forts are to be constructed round the *enceinte* in the "spring, commencing with three on the south-west and west of the "town ; on the left bank of the Wartha there will be two large and "three small forts, and on the right bank four large forts. To "facilitate the transport of materials for the construction of the "advanced works, a road is to be made near the villages of Gourtchine "and Younikow, in connection with the great Breslau Road. It is easy "to imagine the vast amount of labour subtracted from agricultural

" work. The inconveniences thus arising have been foreseen by the military authorities, who have declared that they will only employ those labourers who have not made any previous engagements with farmers, proprietors, &c. This measure will, however, not be very efficacious, as the labourers, attracted by the high pay, will find plenty of excuses for breaking their engagements. Anyhow the construction of the forts threatens agriculture with danger, from which, profit will be derived only by those fortunate proprietors on whose property the works are to be erected. It is true that by law the State takes possession of their property, but on the other hand the loss is compensated by the very high prices paid. . . . . Whilst these works are in progress, building is completely at a standstill inside the town. . . . ."

The "National Zeitung," of the 8th March, endeavoured to reply to this article, but practically admitted that the transformation of old fortresses, on the Russian frontier, into fortresses of the modern type is in progress, a measure of self-defence, for taking which Prussia can hardly be blamed.

In connection with this subject we learn from the "Revue" of the 2nd of September that by a decree of the Minister of War, date 22nd July last, Glogau and Thorn, têtes-de-pont on the Oder and Vistula respectively, Neissi on the S.E. frontier, and Spandau, the arsenal near Berlin, hitherto considered fortresses of the second class are henceforth rated as first-class fortresses, as also is Kustrin at the confluence of the Oder and the Warthe, hitherto a third-class fortress.—(O.)

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## NOTICE OF BOOK.

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"*Jahresberichte über die Veränderungen und Fortschritte im Militärwesen.*"<sup>1</sup>

SUCH is the somewhat lengthy title of one of the most valuable military publications of the day. Indeed we cannot call to mind anything at all approaching it, either as to the mass of its information, the width of its scope, or the general excellence of its matter. The editor, Colonel von Löbell, must be a man of immense energy and talent to have devised and carried out so complete a plan. Colonel von Löbell deserves the gratitude of every scientific military man, and we sincerely hope that his efforts may meet with the practical appreciation they deserve. He proposes to make his publication an annual one, giving, as the title designates, reports of the changes and progress in the various branches of military art in the preceding twelvemonth. The number before us treats of last year, and is but the second that has been published.

There are many contributors—one Englishman, one Italian, one

<sup>1</sup> Mittler und Sohn, 69, Kochstrasse, Berlin.

Dane, one Dutchman, one Austrian, but the remainder, some twenty in number, belong to the German army, and principally to the *staff corps*. The foreign Officers give each a report on the organization of the army of their country. The Englishman, Lieutenant-Colonel Howard Vincent,—a frequent writer in our own pages, and lecturer in the theatre of the Institution—has an article on the *Heerwesen Grossbritanniens*. We confess that it appears to us unnecessarily brief, but the author excuses himself for treating his subject so cursorily by the fact that he had to write the article amid his travels and investigations last autumn in the Ottoman dominions.

The volume under our notice is divided into three sections, the first containing reports on the organization of individual armies; the second, reports on the various branches of military science; the third, materials for the military history of the year 1875. We shall not, we are sure, be overtaxing the patience of our readers if we look roughly into the details of each of these divisions.

The first contains, as we have said, reports on the organization of individual armies. It occupies nearly 300 quarto pages of matter, and really treats of every army in Europe. We presume that the bulk another year will not be so considerable, for it would almost seem, after reading these twenty reports, there is nothing left to learn, as far as theory extends, in the various military systems obtaining in Europe. To Germany, as of right, is assigned the place of honour. The names of authors are not, with the above exceptions, and wisely it may be, appended to the articles they contribute, so we cannot award more praise to the one pen than to the other. After the German report comes the Belgian, then the Danish, French, Grecian, British, Italian, Montenegrin, Dutch, Austrian, Portuguese, Roumanian, Russian, Swedish, Servian, Spanish, Turkish, American, and Japanese. Our limited space will not permit us to examine each report minutely. It is not, however, too much to say that they all, without exception, attain a very high figure of merit. In some cases, it is obvious the author has been obliged to rely, in a very great measure, on such statistics and information as penetrate through the diplomatic channel to the outer world; and the minuteness and accuracy which distinguish a report made upon the spot, are wanting. This remark applies peculiarly to the report on the Servian forces, exalted as high as any candidate for popularity in Belgrade and the Skouptschina could wish. In the Roumanian report, the Hohenzollern sympathy is decidedly apparent, and we are sorry in the Turkish to perceive a tendency to confound military matters with civil delinquencies. The French report appears to us to be impartially drawn up. It occupies nearly 50 pages of the volume (beside which Colonel Vincent's 11 pages look a little meagre), and though we regret its not coming from the pen of a Frenchman, for we assume it does not, as the name of no French Officer appears in the list of contributors, we must concede that the author has treated his subject most conscientiously. Colonel von Löbell having included even Japan in his search for military information, vividly brings home to our minds the activity with which the Intelligence Department of the

Berlin Staff Corps is administered, and not only the excellence but the extent of its sources of information.

The second division into which Colonel von Löbell has arranged his matter consists of reports on the various branches of military science. Nor is he here more behind-hand than with the reports on foreign armies. There is absolutely no department which Colonel von Löbell has not allotted to one of the Officers who write for him, and with such judgment have the tasks been given out, that the result is admirable. The first section is upon infantry tactics; and Germany, France, Austria, Russia, and Holland are noticed. Then follows a report on cavalry tactics, and the changes effected in the cavalry manœuvring of Germany, Russia, France, Austria, and England during the past year are recorded. Under the last subsection we find the recent orders for the movements of cavalry; and it even goes so far as to reproduce the memorandum of his Royal Highness the Field Marshal Commanding-in-Chief.

After the cavalry reports, we have reports on field and garrison artillery, on artillery train, on siege guns, on coast batteries, on gunpowder and the leading explosives, on small arms, on fortification. These are next succeeded by reports on the development of military statistics, on military supplies, on the Geneva Convention and its branch societies, on military telegraphy, on the Kriegsspeil, on military surveying, on map drawing, and on military literature. We are sorry to be obliged here to content ourselves with a bare enumeration of headings. It must necessarily rob our notice of much interest, but we have adopted this course as being the one best calculated to set before the members of the Institution the extremely valuable nature of Colonel von Löbell's compilation.

Nor is the third and last division inferior to the other two. It contains materials towards the military history of the year 1875. Commencing with a report on the Carlist war, going on with another on the hostilities in which the Dutch troops have been engaged, continuing with a necrology of the more prominent Officers who died last year, it concludes with a from day to day calendar of the leading military events in Europe, and a complete index of the contents of the whole volume. Indeed, as one reads on, one's admiration of the work cannot fail to increase. It is so complete, so impartial, that if anxious to find some fault, we must absolutely turn to the binding. This is in the loose German style. To cut the leaves is a serious labour; and it is not conducive to a temperament for study when the pages insist on coming out in the reader's hand. Before the work can be read with any comfort, it must be bound, and this is truly the only suggestion we find it possible to make concerning it. Every Officer should read the Berichte from end to end, and if ignorant of German, he should learn the language in order to be able to do so. Moreover, when the present volume is superseded by a successor, it will be a valuable addition to the impedimenta of a regimental mess. Once more we say that Colonel von Löbell deserves our gratitude; and, on behalf of the Institution, we tender him hearty thanks.

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